July 1954

RAILWAY TRACK and STRUCTURES

No Slippage Here!

• The Crocodile is noted for its powerful jaw and vise-like grip. It never lets go!

So it is with the IMPROVED FAIR. Once it is applied to the rail, there is the assurance of definite holding power with no possible slippage.

THE P. & M. CO.

CHICAGO • NEW YORK • DENVER • ST. LOUIS • BOSTON • ST. PAUL • WASHINGTON • CLEVELAND • SAN FRANCISCO • MEXICO CITY

Let Reliance HY-CROME spring

washers help you maintain safe rail joints

Safety is a prime factor in the operation of a railroad. This is a commodity that all railroads must sell to their prospective customers.

Tight rail joints contribute to the safety of every railroad's operation. Reliance Hy-Crome Spring Washers manufactured specifically for rail joint bolt applications compensate for looseness created by wear, vibration and bolt elongation in the rail joint. By maintaining constant reactive tension, they keep bolted parts **tighter longer.**

Investigate this low cost fastening device that will promote a safer, smoother riding track. Write for Engineering Folder R53 which covers the specification and sizes of the Reliance Hy-Crome line of Spring Washers.

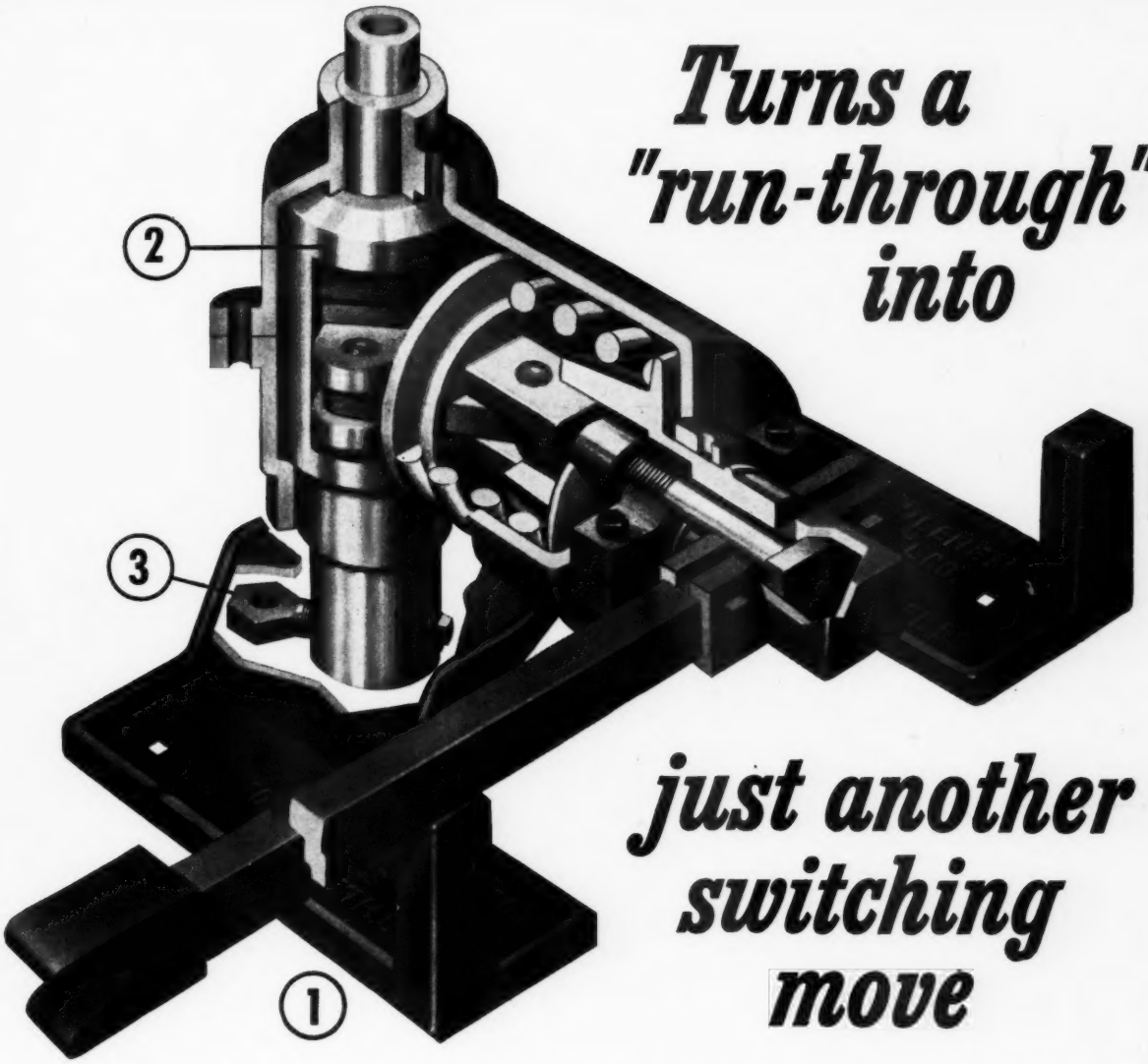
"Edgemark of Quality"

RELIANCE DIVISION EATON MANUFACTURING COMPANY

OFFICE and PLANTS: 901 CHARLES AVE., S.E.

Special Steels Spring Lock Washers Hoz-Fas-Ners

SALES OFFICES: New York • Cleveland • Detroit • Chicago • St. Louis • San Francisco • Montreal



Turns a "run-through" into just another switching move

Here is an automatic switch stand that takes run-through movements right in stride, with no pain or strain, no fuss or feathers. Bethlehem's Model 99 was built unusually husky—considerably heavier than any other—to insure long life in this rugged kind of service.

The cutaway drawing portrays brute strength, and this stand really has it. What looks like an extra-large base (1) actually is an extra-large base, for added stability on the ties. That spindle lug (2) really is a brute, and its bearing areas top and bottom really are outsize, to give longer life to this key component.

Even the screweye (3) is something special. Forged of heat-treated alloy steel, it has rounded thread roots to minimize stress concentration which could lead to fatigue failure.

Operation of Model 99 is simple and foolproof, with a minimum of working parts. In a trailing movement, the first set of wheels nudges the points toward the new position. The powerful compression spring then takes over the completion of the movement and holds the points in the new setting until they are returned, either by the operating lever or another run-through operation. The target always changes with the points, but the lever doesn't move unless thrown by hand.

This new Bethlehem switch stand seems to be just what the railroads want, for hundreds of Model 99's have already been placed in service. If you have some yard or branch line turnouts where run-through operations have caused trouble, the Model 99 will step in and do a job. A Bethlehem engineer will be glad to talk it over with you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM AUTOMATIC SWITCH STAND MODEL 99

BETHLEHEM STEEL

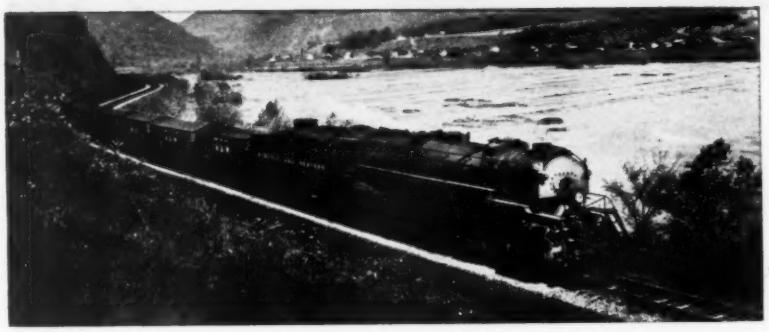
Published monthly by Simmons-Boardman Publishing Corporation, 79 W. Monroe St., Chicago 3, Ill. Subscription prices: to railroad employees only in the United States and Possessions, and Canada, one year $1.50; $2.00 for two years. Single copies 50 cents. Entered as second-class matter January 20, 1933, at the post office at Chicago, Ill., under the act of March 3, 1879, with additional entry at Bristol, Conn. Volume 50, No. 7.

Rail Testing costs drop when N & W and Sperry Rail Service team up

"Thorough rail testing is vital to our operations," says Mr. A. B. Stone, Chief Engineer of Norfolk and Western, "and so is smooth scheduling of our high density traffic during testing periods. We've combined both and cut chargeable time for Detector Car operation by 70% through close cooperation with Sperry Rail Service personnel."

"Timing is the key to coordinating movements of the Detector Car with our high speed passenger and freight trains," Mr. Stone continues. This photo shows passenger train No. 9 pulling through siding at Elliston, Va., while the Sperry Detector Car continues main line testing between switches. No time was lost in passing.

"Leaders since 1928 in nondestructive testing" has been more than a slogan with Sperry. Among the most important contributions to railroad safety is the use of the ultrasonic Reflectoscope for in-place testing of locomotive axles, car wheels and other equipment . . . locating hidden fatigue cracks and other defects before failure occurs. Call or write for further information.



High density traffic and Detector Car schedules are fully integrated when Norfolk and Western and Sperry Rail Service team up for periodic tests of N & W track. As Mr. Stone puts it, "The determined effort and close cooperation of every person involved in the operation of the Sperry Detector equipment has made each succeeding test more efficient and economical than the last."

Each day's testing itinerary is prepared in advance. Track to be tested is cleaned and marked, train movements are studied, passing places decided upon, and operating personnel in the territory alerted. From the experience of Sperry Rail Service in testing more than 2,000,000 miles of track, Sperry operating personnel are alert to every opportunity to increase testing efficiency. Photo shows N & W Time Freight No. 96 passing Sperry Car in the hole at Berryville, Va.

FIRST IN RAIL TESTING

SPERRY RAIL SERVICE

Division of Sperry Products, Inc.

Danbury, Conn.

New York Chicago St. Louis

"HANDYMAN" On The Line!

WHAT IT WILL DO!

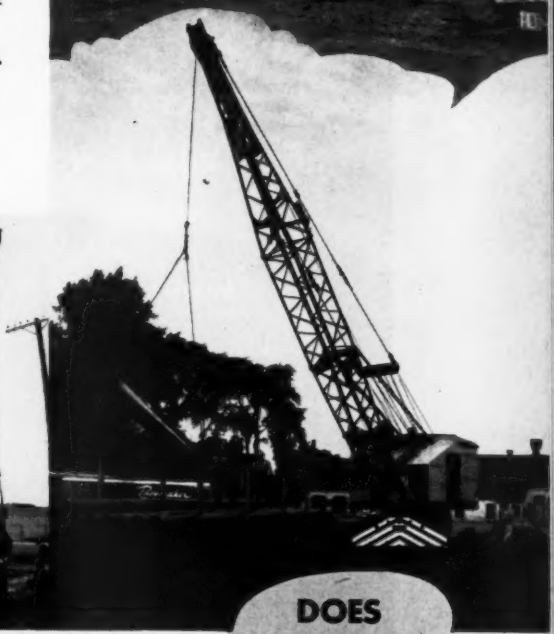
- Loads and unloads cars
- Unloads and sets long or short rail
- Trims bank
- Handles bridge steel
- Handles storeyard materials
- Handles ditching
- Sets poles
- Handles heavy loads for maintenance and repair crews
- Builds out shoulders
- Loads and unloads ties
- Does grading
- *Does anything that requires lifting or digging!*

Here's a piece of equipment you can put almost anywhere a truck will go! It will serve on maintenance and repair jobs where heavy lifting is required. It will save money on new construction. It will handle any type of material, drive piles, swing a magnet, dig ditch, handle tongs, set new machinery!

The Northwest Truck Crane brings you a combination of advantages found in no other similar equipment. It combines all the Northwest Crane advantages, the "Feather-Touch" Clutch Control for easy operation, Uniform Pressure Swing Clutches, a choice of Boom Hoist Equipment, cast steel machinery bases and side frames and many other advantages with improvements in Truck design and construction that assure easier operation and greater versatility, and it can be converted to a Shovel or Pullshovel without repositioning the base casting. Both over-size tires that make track climbing easy and power steering are available.

Let us send you complete details on the rig. There is a detailed catalog that will interest you. Write for it.

NORTHWEST ENGINEERING CO.
1513 Field Bldg., 135 South La Salle St.
Chicago 3, Illinois



NORTHWEST

THE ALL PURPOSE RAILROAD MACHINE
SHOVEL • CRANE • DRAGLINE • PULLSHOVEL

DOES THINGS NO TRACK-TYPE RIG CAN DO

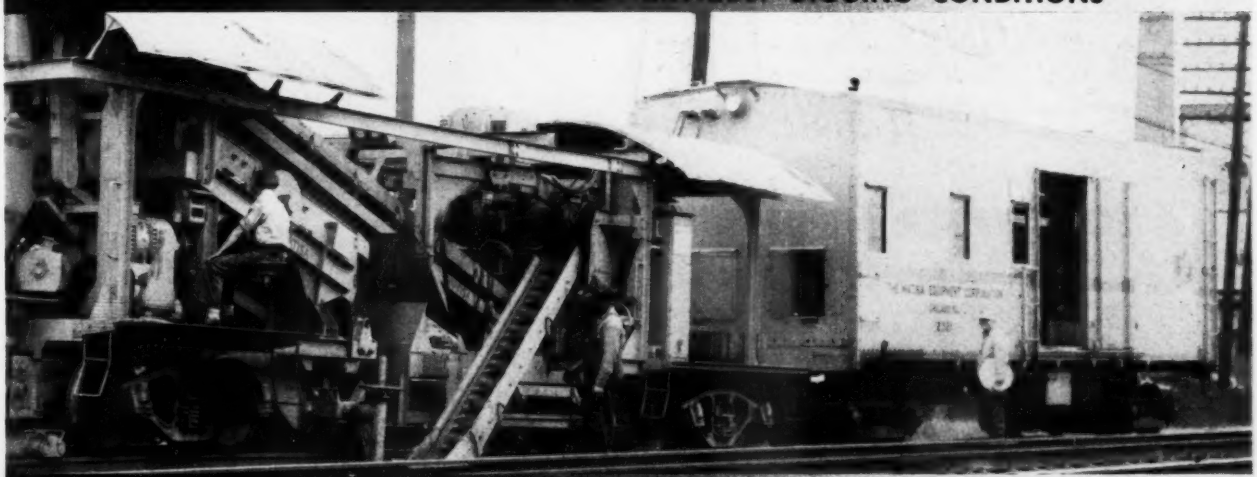
Matisa BRINGS YOU AN ALL NEW BALLAST CLEANER

NOW IT COSTS LESS TO

HERE'S HOW IT WORKS

Baffle plate closes for straight excavating. (For example, for track lowering purposes.)
Dirt routed forward.
Dirt or excavated material deposited or loaded for removal.
Dirt and foreign material removed and ballast graded to size on fast-vibrating screens.
Excavates all ballast between and under the ties—without disturbing the sub-grade. New chain cuts tough ballast—faster!
Large ballast automatically returned directly behind excavation.
Small ballast automatically deposited on top of larger stone.
Large ballast on bottom, small ballast on top for better tamping—better drainage.

COMPLETE NEW DESIGN FOR *FAST* WORK
UNDER DIFFICULT DIGGING CONDITIONS



HAVE BETTER TRACK *Faster!*

• FASTER SET-UP TIME!
No long gap between excavation point and fill . . . re-deposits clean ballast *immediately behind* point of excavation. WHICH MEANS FASTER DISCONNECT TIME, TOO! No fill-in at end of shift.

• FASTER OPERATING!
New, revolutionary chain design cuts *under* the tie (always an exclusive with Matisa) *without disturbing the subgrade.* Reconditions and replaces ballast at *600 ft. per hour.*

• FASTER TRAVELLING!
Now — self-propelled on normal trucks at 35 miles per hour!

• The NEW MATISA
Lowers track—*saves* ballast, too! The high cost of ballast alone is an important item!

ASK OUR SALES ENGINEER TO GIVE YOU MORE DETAILS ON THE *SPEED, SAVINGS AND EFFICIENCY* OF THE NEW MATISA BALLAST CLEANER.

OUR SALES ENGINEER CAN ALSO GIVE YOU FACTS ON THE VERSATILITY OF *MATISA'S* OTHER CLEANING MACHINES FOR TUNNELS, STATION CLEANING AND *SPECIALIZED* CLEANING TASKS!

Matisa EQUIPMENT CORPORATION
225 S. MICHIGAN BLVD. - CHICAGO 4

TRACKWORK SPECIALISTS ALL OVER THE WORLD

3 COST-SAVING REASONS

Why more and more railroads are specifying Transite® Pipe

FOR WATER MAINS

1. Low Installation Costs: Water lines are quickly assembled . . . pipe crews lay more pipe per day . . . when Transite® Pressure Pipe is used for water lines—because Transite is light, easy to handle . . . because joints are easily made and readily checked during assembly . . . because deflections up to 5 degrees at each joint permit laying pipe around curves without special fittings.

2. Low Operating Costs: Transite Pipe has a smooth interior surface that offers minimum resistance to flow of water. Furthermore, its initial high flow capacity cannot be reduced by tuberculation—the internal corrosion that reduces the flow capacity of ordinary water pipe. This helps assure high pressures and an ample volume of water for future requirements . . . helps keep pumping costs low.

3. Low Maintenance Costs: Transite Pressure Pipe is made of asbestos and cement by a special Johns-Manville process that develops exceptional resistance to corrosion. This has been substantiated in literally thousands of water lines and is an index of the long service to be expected of Transite Pipe. In addition, Transite's tight, flexible joints guard against costly underground leakage—further assurance of low water-line maintenance over the years.

In this Atlantic Coast Line R.R. station and shop area, Sandford, Fla., Transite Pipe water mains cross under four main-line tracks at two points. Each line terminates at a hydrant and has taps and reducers to smaller pipes. Illustrations above show Atlantic Coast Line's "The West Coast Champion" pulling in to the new station and a view of the car shed and shop facilities at Sandford.

For further information about Transite Pipe, get in touch with your J-M Representative, or write for Brochure TR-11A, Johns-Manville, Box 60, New York, N. Y.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville

96 YEARS OF SERVICE TO TRANSPORTATION

NEWS NOTES...

JUNE, 1954

...a resumé of current events throughout the railroad world

A single-unit, 4,500-hp, coal-burning, steam-turbine-electric locomotive is now in service on the Norfolk & Western. The experimental engine was built by the Baldwin-Lima-Hamilton locomotive works. It weighs 58 tons and is 161 ft, 1½ in long.

•

The Union Pacific recently completed a $4-million yard at Kansas City, Kan. The 2,764-car yard is approximately 1½ miles long, has 34 tracks and is equipped with power switches. A 48-ft yardmaster's tower is radio-equipped to communicate with 28 switch engines and three supervisory automobiles which are used in the area.

•

Preliminary plans for a new $10-million retarder yard and freight station, replacing its Strawberry yard, at Louisville, Ky., have been announced by the Louisville & Nashville. Tentative plans for the new yard call for 56 classification tracks with a capacity of 2,200 cars; 14 receiving tracks capable of handling 1,200 cars, and a 16-track departure yard with a capacity of 1,841 cars.

•

A total of $39.5 million in local real estate taxes was paid last year by the 15 railroads operating in New York state. In addition, railroads paid many millions of dollars in state taxes, over half of which are returned to local governments in state-aid payments.

•

Highway haulers in many localities are reportedly beginning to feel the impact of the rails' "competitive pricing," and a large manufacturer, heretofore an exclusive truck shipper, is said to be finding out that rail shipments to big accounts broaden dealer coverage and promise production economies.

•

The Union Pacific and Chicago & North Western have dropped extra-fare charges on the "City of San Francisco," between Chicago and Ogden, Utah. So far, there has been no indication that the Southern Pacific will take a similar step for that portion of the train's run west of Ogden.

•

The Santa Fe's "San Francisco Chief" recently made its debut as the first through streamlined train operating over that road between Chicago and San Francisco. The new train is equipped with streamlined, lightweight cars and features a full-length dome-lounge car.

•

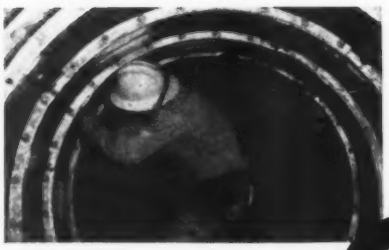
Truckers seem to be somewhat concerned over the competition of railroad "piggy-back" service in the East. Many protests have been received by the ICC against tariffs under which the Erie, Lackawanna, Nickel Plate and Pennsylvania are to begin trailer-on-flat-car service.

•

The Brotherhood of Locomotive Firemen & Enginemen and the Brotherhood of Railroad Trainmen have announced that they will seek further wage increases, in addition to those granted recently in the so-called "trainmen package" settlement. The BRT also plans to press demands for further changes in working rules.

•

Yard-service enginemen on the Eastern Lines of the Canadian National have discarded the five-day week after a month's trial. The decision to return to the six-day week is said to have been based on pay cuts enginemen had to accept along with the shorter week.



New Culvert—Wyoming

Railroads Solve 6 JOBS with Liner Plates

Replacing Box Culvert —Kansas

Auto Underpass—Kentucky

Pedestrian Underpass —Missouri

Water Main Conduit — Wisconsin

There are many more applications. But these six typical railroad installations show how Armco Liner Plates can provide the low-cost answer for drainage, conduits and underpasses under existing tracks.

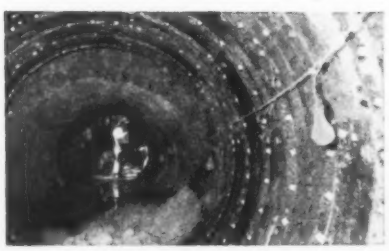
In most of these jobs, installation by open-cut would have been impractical or too costly. Tracks would have to be supported across the excavation and train traffic would be hampered by "slow orders."

But when tunnels are installed with Armco Liner Plates, workers simply add successive rings of plates as the job progresses—and trains can maintain normal speeds overhead. A small crew can handle the whole job, keeping labor costs down. Minimum excavation is required and all bolting is done from inside the structure. Work speeds ahead regardless of the weather.

Armco Liner Plates are widely used by railroads as lining for failing structures, as well as new tunnels. Diameters of tunnels assembled from Armco Plates range from 4 to 15 feet. Write us for more data. Armco Drainage & Metal Products, Inc., 4354 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO LINER PLATES

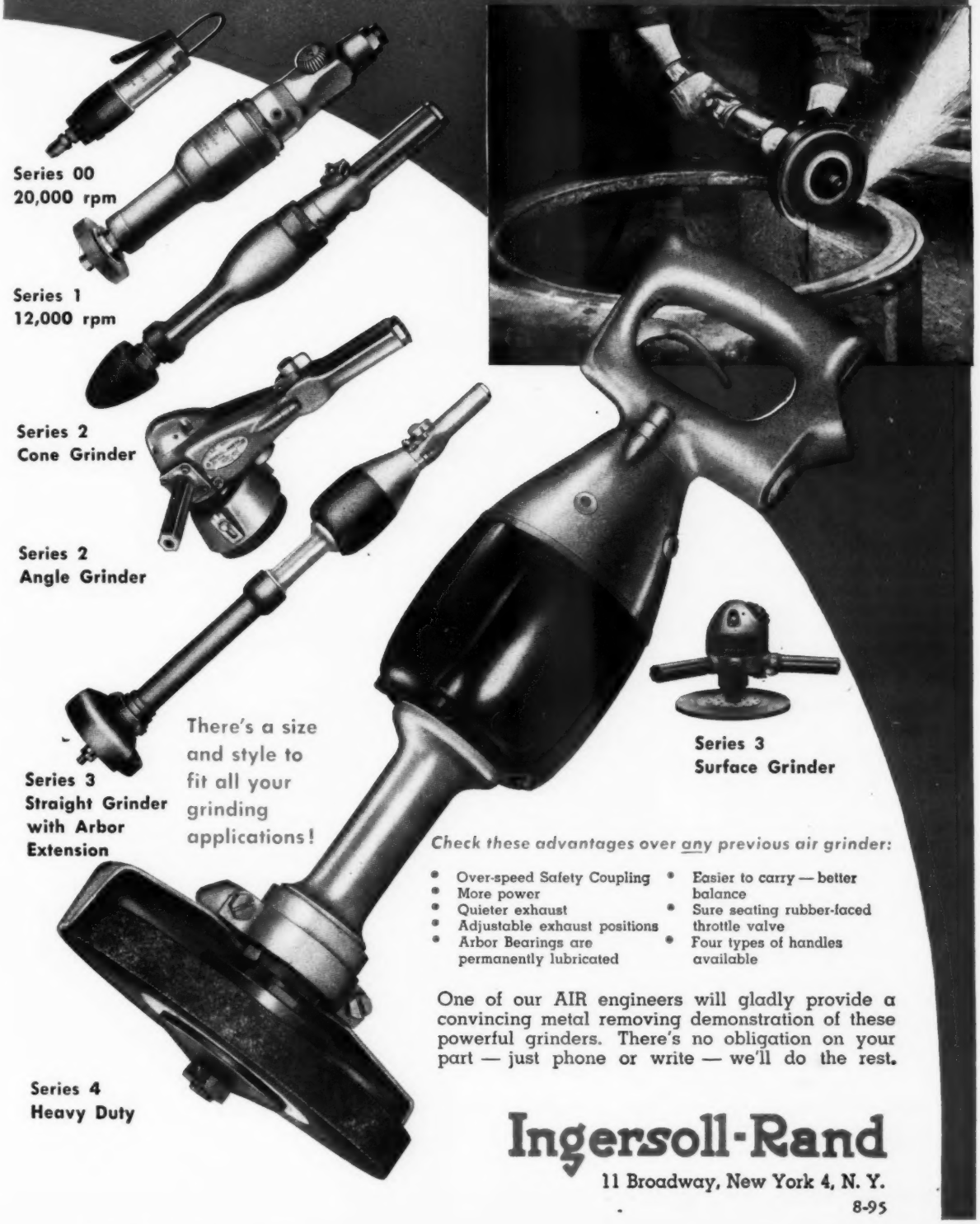
ARMCO®



Relined Culvert—Alabama

AIR GRINDER

Removes More Metal FASTER • EASIER • SAFER at LOWER COST!



There's a size and style to fit all your grinding applications!

Check these advantages over any previous air grinder:

- Over-speed Safety Coupling
- More power
- Quieter exhaust
- Adjustable exhaust positions
- Arbor Bearings are permanently lubricated
- Easier to carry — better balance
- Sure seating rubber-faced throttle valve
- Four types of handles available

One of our AIR engineers will gladly provide a convincing metal removing demonstration of these powerful grinders. There's no obligation on your part — just phone or write — we'll do the rest.

Ingersoll-Rand

11 Broadway, New York 4, N. Y.

8-95

Burying cables, Gradall digs the trench, backfills, removes and loads out excess fill. The "arm" and "wrist" action of boom and bucket enable the operator to do a hand-finish job.

11 different jobs on track relocation ALL handled by ONE GRADALL!

On a million-dollar track relocation project, an eastern railroad's Gradall really demonstrated its money-saving versatility!

Gradall made it a "one-machine" job! The work involved building a double track over a fill to replace a single-track trestle over a swamp—plus "extra" jobs moving crossings, semaphores, etc. Trains can now maintain speeds of 45 mph through the area, eliminating the 15 mph bottleneck created by the trestle.

Look at this list of jobs—*all* handled by this one Gradall:

- Installing 800' of 24" culvert.
- Spreading ballast.
- Aligning track.
- Burying cables and removing excess fill.
- Installing semaphores—Gradall dug footer and placed signal in position after concrete was poured.
- Grading and building up roadbed.
- Loading out old ties.
- Building new crossing—clean-up preparation and spreading and rolling asphalt.
- Moving gateman's shanty to new location.
- Setting 78', 140 lb. rail.
- Dressing slopes.

Gradall clears the way for new roadbed. Note the new double-track line curving in from fill to meet old track, eliminating single-track trestle at top right.

In addition, this railroad has used Gradall for cleaning track (600' to 800' per day), replacing ballast, as an emergency unit, and for many other maintenance and construction jobs.

You, too, will find that a *single investment* in a Gradall will give you a machine that will do the work of *many* "specialized" machines, eliminate costly hand labor, and cut costs. Write us for a Gradall demonstration right on your job: *The Warner & Swasey Co., Gradall Division, Cleveland 3, Ohio.*

Gradall
DIVISION OF WARNER & SWASEY Cleveland
PRECISION MACHINERY SINCE 1880

Gradall Distributors in over 75 principal cities in the United States and Canada

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

We make our own steel

The quality control no other bearing manufacturer can give you

TO find steel good enough for Timken® bearings, we had to go into the steel business ourselves.

Because we're the only bearing company that makes its own steel, we're the only one that can control bearing quality every step of the way—from melt shop through final bearing inspection. It's by far our costliest and most important quality control.

Equipped with nine huge electric furnaces, three of them brand new, our mill is as advanced as science can make it. Our steel research staff is constantly searching for ways to make Timken bearing steel better. For instance, we were the first company to analyze steel with a direct-reading spectrometer for split-second control of the melt.

Making our own steel is only one of the scores of production, control and inspection steps we employ to make Timken bearings the finest. To be absolutely sure of the highest performance standards in the equipment you build or buy, always specify Timken tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

TIMKEN
(TRADE-MARK REG. U.S. PAT. OFF.)
TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭

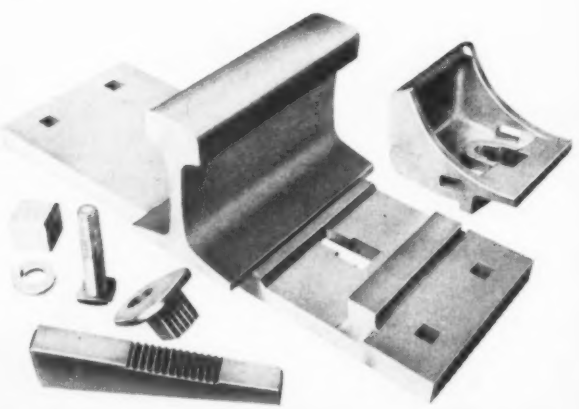
BEARING TAKES RADIAL ◎ AND THRUST —◎— LOADS OR ANY COMBINATION ✳

Introducing---

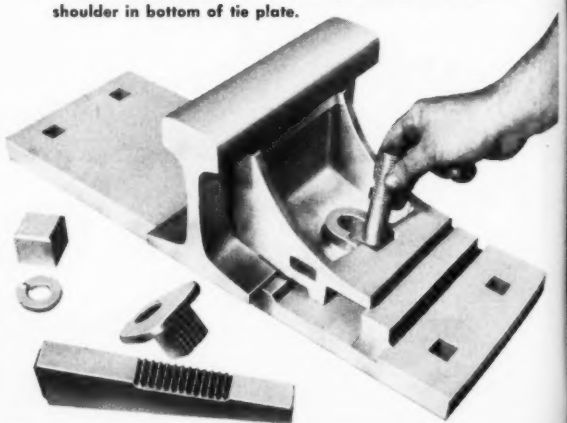
LOW MAINTENANCE

QUICK INSTALLATION

1. Assembly takes place after the rail is seated on the plate and plate has been spiked to the tie.



2. Brace is snugly fitted into the fishing of the stock rail. Bolt is then inserted from the top with the head down, moved in toward the rail until bolt head is positioned and held under shoulder in bottom of tie plate.



The New, Self-locking USS Taylor Adjustable Rail Brace

THE new Taylor Adjustable Rail Brace offers advantages found in no other rail brace. Combining the simplicity of good design with rugged construction, it insures sturdy rail support – takes the repeated side thrusts of heavy, fast traffic without loosening, thus maintaining track gage and alignment.

Installation is quick. Rail, tie and plate need not be disturbed. And once installed, the USS Taylor Adjustable Rail Brace is *locked* in position. Even if the cap nut becomes loosened, the locking plate with its serrations interlocking those of the wedge will continue to hold the wedge in the proper position. The bolt serves merely as an anchor for the locking plate plug, while the cap nut and shielded locking plate protect the bolt threads against corrosion.

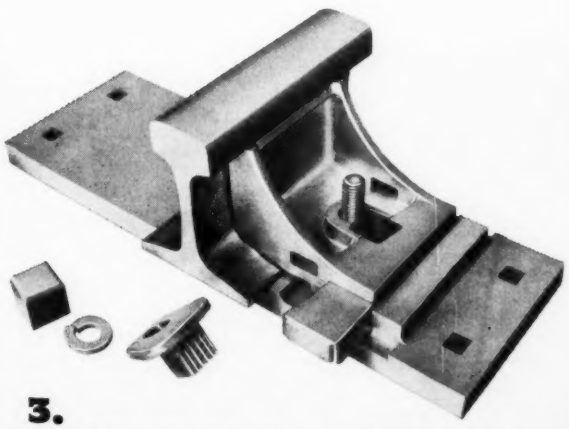
Maintenance on this type of brace is rarely necessary

The efficient design of the Taylor Adjustable Rail Brace results in less wear, a minimum of adjustment and longer service life. When adjustment is required (due to wear), the locking plate plug is simply lifted and the wedge tapped in with a hammer.

For further information, write to United States Steel Corporation, 525 William Penn Place, Room 4407, Pittsburgh 30, Pennsylvania.

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

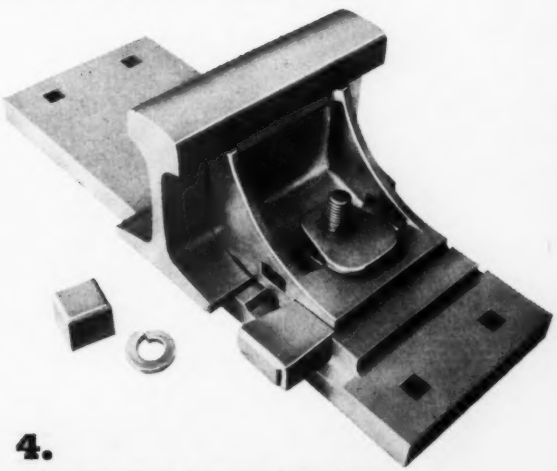
USS TRACKWORK



3.

Wedge is then driven tight with its serrations facing the rail. Opposite side of wedge is inclined to fit the undercut face of the stop block.

USS



4.

Locking plate plug is dropped on bolt and into hole in brace. Serrations on outer face of plug engage those of the wedge, while inner smooth face of plug engages the vertical shoulders of the brace. Spring washer is then placed on bolt, and cap nut is applied and tightened.

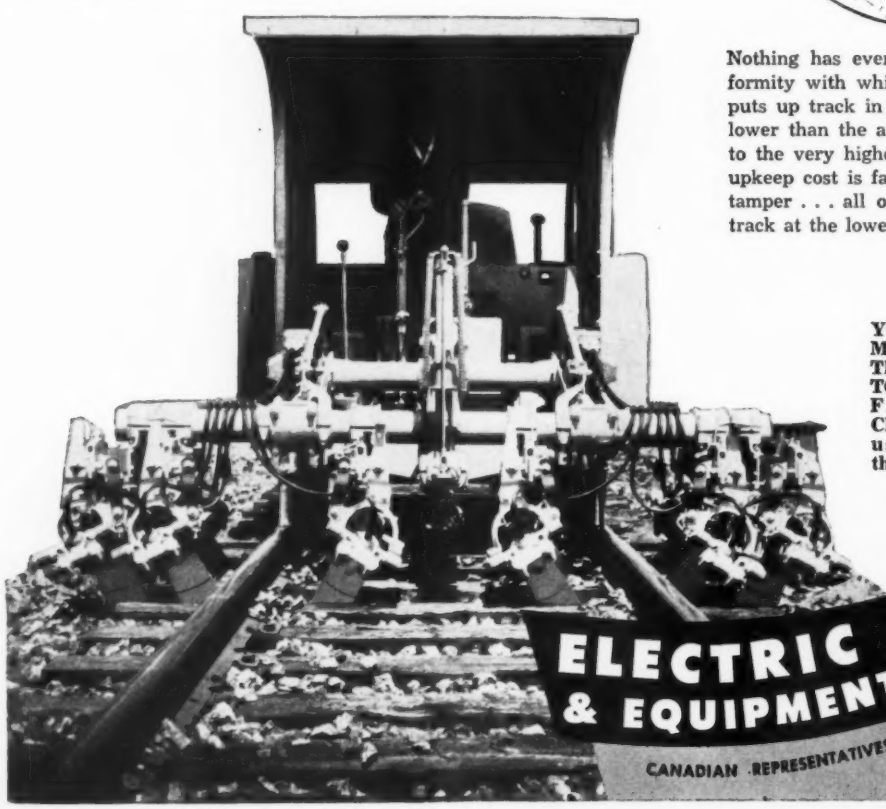
TO LOWER THE COST OF MAINTAINING TRACK and ROLLING STOCK...

use JACKSON MULTIPLES

THE ONLY ON-TRACK MACHINES THAT TAMP the VITAL SPOT

See how the blades of the JACKSON penetrate and tamp directly beneath the rail, that vital area where greatest weight is imposed. No other on-track tamper is built to do this, and therefore no other can give you the thorough consolidation of ballast at this all-important point and consequent longer-lasting job that the JACKSON achieves. The net result is track that requires considerably less maintenance — that stays smooth even under very heavy high-frequency traffic — that's kind to rolling stock and reduces the cost of maintaining it.

Nothing has ever equalled the speed and uniformity with which the JACKSON MULTIPLE puts up track in any lift from that which is no lower than the average size of the ballast used, to the very highest. Both its initial cost and its upkeep cost is far less than any other on-track tamper . . . all of which adds up to: "Finest track at the lowest possible cost per mile."



YOU CAN PUT A JACKSON MULTIPLE ON YOUR OWN TRACK AND PROVE THIS TO YOUR ENTIRE SATISFACTION BEFORE PURCHASING. Let us give you the details.

MFD. BY JACKSON VIBRATORS INC. LUDINGTON, MICH.

ELECTRIC TAMPER & EQUIPMENT CO. LUDINGTON, MICHIGAN

CANADIAN REPRESENTATIVES: MUMFORD, MEDLAND, LTD., WINNIPEG, MANITOBA

TWO METHODS
OF RESTORING EMBANKMENTS

Story-in-pictures of how a southwestern railroad restored embankments along several miles of track in Texas.

1 Earth was excavated from high spots along right-of-way. Here this work is seen being done with an Allis-Chalmers 2-yd. HD-9G Tractor Shovel.

Dirt was loaded to trucks which hauled it to where embankment repairs were being made.

Material dumped along tracks then was spread and compacted by this Allis-Chalmers 72-hp. HD-9 Tractor equipped with angledozer.

2 Farther down the right-of-way, where another crew was at work, the procedure was a little different. Tractor-scraper units, such as this Allis-Chalmers HD-9 Tractor pulling a 5-yd. two-wheel scraper, hauled dirt from high spots along the track and dumped it where embankment was to be built up.

The dirt was spread and compacted by this Allis-Chalmers 104-hp. AD-40 Motor Grader, which shaped the shoulders at the same time.

The railroad who's equipment is shown here reports now handling 80 percent of roadbed construction and maintenance by off-track methods — for safety, economy, flexibility and speed. It uses tractors principally for grading, plus heavy hauling and clearing derailments. Motor graders are used for lighter grading and for dressing.

Write for complete information on how Allis-Chalmers Tractors, Tractor Shovels, Motor Graders, Motor Scrapers, Motor Wagons and Allied equipment can help *you* efficiently handle construction and maintenance. Or let us put you in touch with your railroad distributor.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U.S.A.

PULLMAN-STANDARD

Pullman-Standard Power Cleaner and Winch Car Team—For the first time both track shoulders can be cleaned simultaneously at 1000 to 1200 feet per hour with only four men. Even in multiple track territory, the shoulder plus half the six-foot are cleaned to a depth of eight to ten inches below the tie base at the same high rate and with the same low labor complement. Your ballast cleaning costs can be reduced by as much as 50%.

Pullman-Standard Power Ballaster—With a production rate of 500 to 700 feet an hour, a Pullman-Standard Power Ballaster, run by a single operator, can be efficiently manned by a crew of 10 to 15 men. Case history studies made on 16 railroads prove that this unit will give more feet of finished tamped track per hour, with less labor and maintenance, than any other production tamper.

Pullman-Standard Power Cribber—The Pullman-Standard Power Track Cribber gives you two cribs a minute, with a single operator. With a normal production rate of 150 to 400 track-feet per hour, its interchangeable 4-, 5-, and 6-inch digger tips enable it to crib efficiently and economically in any type of ballast, regardless of cementation.

POWER CLEANER and winch car team

- distributes cleaned ballast wherever required
- cleans both shoulders at the same time
- works to a depth of eight to ten inches below tie base
- requires only one operator for each car and two laborers
- work rate is 1000 to 1200 ft. per hour
- forward or reverse running speeds of 25 mph
- power winch car develops up to 30,000 pounds of tractive force
- units have lateral set-off
- Each machine can be run independently or can tow the other

Be sure to get all of the facts about Pullman-Standard Power Track Maintenance Equipment. Write or phone the nearest office.

YOUR NEEDS CREATE THE PULLMAN "STANDARD"

PULLMAN-STANDARD

CAR MANUFACTURING COMPANY

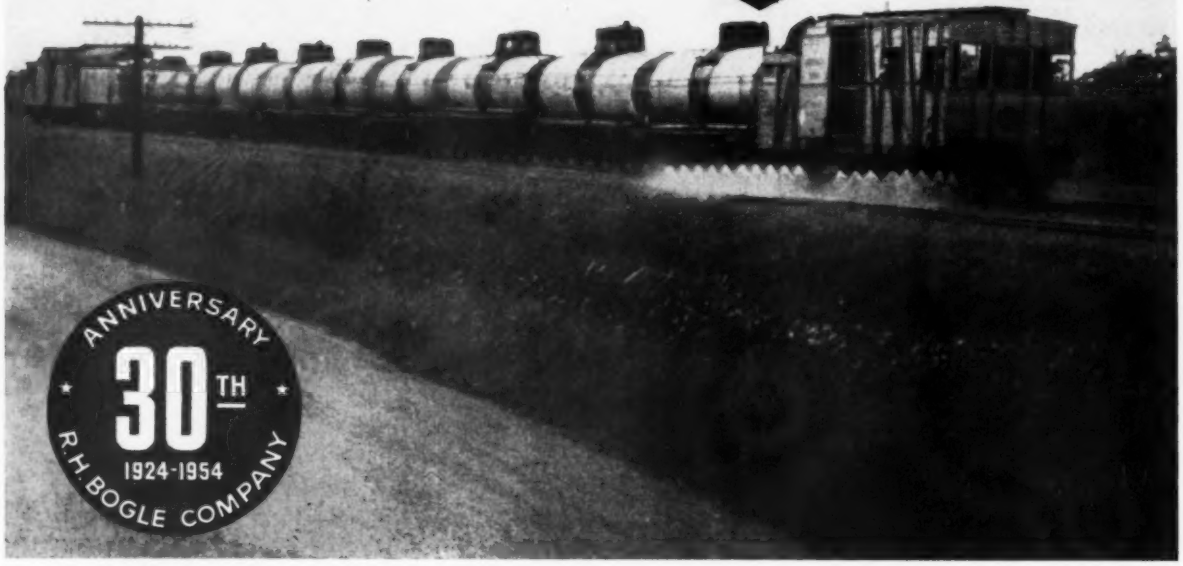
SUBSIDIARY OF PULLMAN INCORPORATED

79 EAST ADAMS STREET, CHICAGO 3, ILLINOIS

BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO, WASHINGTON

Which Is More Economical

THIS?



OR THIS?

Every maintenance engineer knows the answer. There is absolutely no comparison in the cost of a well-conceived weed killing program and the eventual toll in poor drainage and a host of other ills that beset track taken over by weeds and grass. It has been repeatedly proved that consistent application of the *right* chemicals applied with modern equipment pays off in lowered maintenance costs —year after year, and to omit treatment ONLY ONE YEAR, can mean the loss of several years effort toward weed free track. That has been the experience of Bogle customers who know the advantages of using a weed and brush killing service with a record of proved results over the years.

The R. H. BOGLE Company

ALEXANDRIA, VA.

Memphis, Tenn.

COMPLETE WEED and BRUSH KILLING SERVICE

1931 23 CONSECUTIVE YEARS 1954
MODERN BALLAST CONDITIONING

BEFORE *"R.B.C.C." Service*

AFTER *"R.B.C.C." Service*

"R. B. C. C." ballast cleaning service has earned its outstanding performance record from 23 years of successful operation. Our 3 and 5 unit trains are entirely self contained on our own standard railroad equipment—No railroad cars are used or tied up.

"R.B.C.C." 5 unit equipment does a thorough ballast conditioning job, cleaning two center ditches or two shoulders or one of each at one trip.

"R.B.C.C." 3 unit equipment, self propelled, does a thorough ballast conditioning job, cleaning one shoulder at one pass on one side only.

"R.B.C.C." ballast cleaning or excavating service, complete with our own personnel and equipment, is handled on contract basis.

RAILWAY BALLAST CONDITIONING CORPORATION

RAND TOWER
MINNEAPOLIS, MINN.

METROPOLITAN BANK BLDG.
WASHINGTON, D. C.

• • • *REPUBLIC Pressure Creosoted Wood

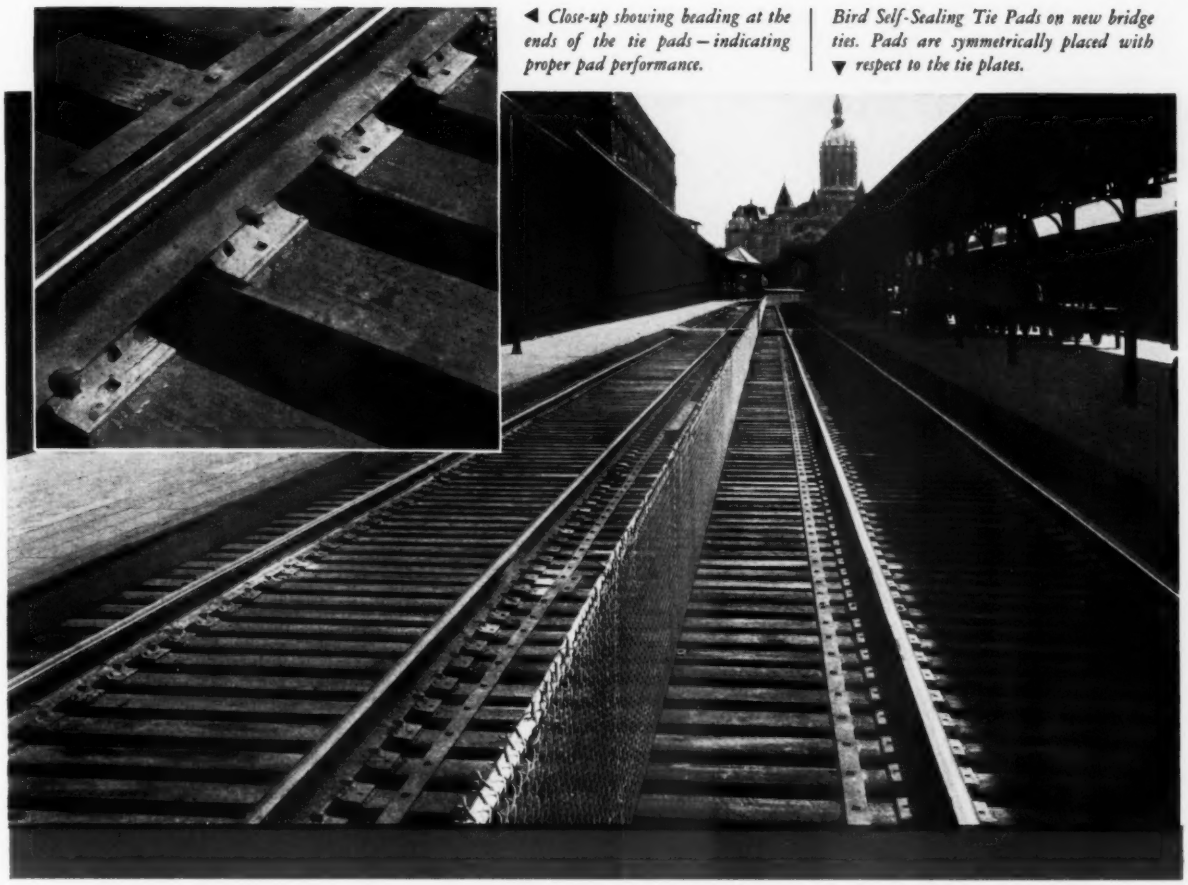
In wet or dry climate, acid or alkaline soil, wood that has been pressure creosoted the Republic way has a remarkable service record.

Time-tested protection under all types of conditions is an important feature of Republic Creosoted Products.

Railroad Ties	Lumber	Cross Arms
Wood Blocks	Poles	Piles
	Anchor Logs	

Republic CREOSOTED PRODUCTS

REPUBLIC CREOSOTING COMPANY
MERCHANTS BANK BUILDING, INDIANAPOLIS 4, INDIANA



◀ *Close-up showing beading at the ends of the tie pads – indicating proper pad performance.*

Bird Self-Sealing Tie Pads on new bridge ties. Pads are symmetrically placed with ▼ *respect to the tie plates.*

Slash your bridge tie costs over 50% with BIRD Self-Sealing TIE PADS

HOW? BIRD Self-Sealing Tie Pads form a waterproof, dustproof seal on the tie that protects the vulnerable area under the plates and around the spikes. Mechanical wear and plate penetration are eliminated. This feature is most important on bridge ties which are the most expensive of all ties. *It's a fact:* only two years of additional tie life (over normal expectancy) will more than pay the cost of BIRD Self-Sealing Tie Pads. Insist on a tie pad which will provide an *effective* seal.

YOU GET 50% or more extra tie life from new ties.

YOU GET at least twice the normal remaining life expectancy from old ties that can be adzed to a smooth surface of sound wood.

BIRD PROVEN BEST! The original self-sealing tie pad – proven by years of in-track experience.

WHERE?

1. On all new bridge decks.
2. On older bridge decks within the limits of a rail-relaying program.
3. On older bridge ties if a smooth surface of sound wood can be provided.

WHEN? Start now. Write today to BIRD Tie Pads, Dept. HTS-7, East Walpole, Mass.

BUY THE BEST **BIRD & SON, inc.** BIRD PRODUCTS *Established 1795* ***BUY BIRD***

At left:
Switch point—Closed position locked

Automatic SWITCH POINT LOCK

Safety WITH ECONOMY

The switch point lock is a safety device of rugged construction, simple in design, and a self-contained unit. It is automatic in its closing and locking action.

To operate the switch point lock, put foot on lever and push down, which releases the switch point. The pedal remains in this position until the switch stand lever is used to close the switch when it automatically returns to locked position.

Closed position unlocked

Open position

Closed position locked

The RAILS Company
RAILS-CO
Hoboken · Chicago · St. Louis

Self-propelled 205 *runs on rails*

saves travel time between jobs . . .

Where conventional excavators and cranes have to be moved off-track over long, round-about routes from one job to the next, the Koehring 205 takes to the rails. RailAid powers its own rail-propulsion car . . . travels on-track at speeds up to 20 m.p.h.

You can send it anywhere along the line, at a moment's notice, to do any digging, lifting or material-handling jobs: cleans ditches, widens embankments . . . loads, unloads cars, stockpiles ballast, coal . . . repairs trestles, drives piles, lays rails . . . handles scrap or salvage.

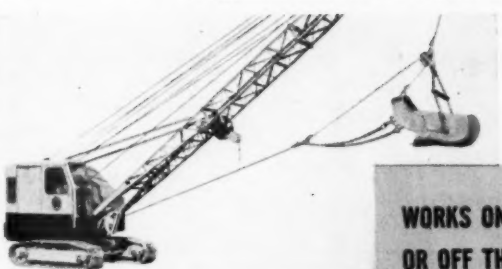
Because all travel is by rail, crawler life is considerably increased. Yet, you have complete flexibility for working on or off-track.

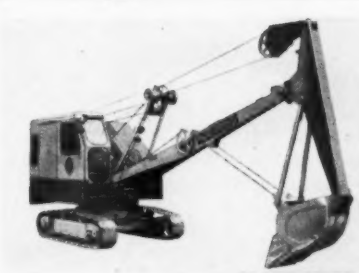
Clears the track in 10 minutes

Crane loads or unloads itself on ramp-equipped car in less than 10 minutes. Sets car on or off-track . . . clears the right-of-way for normal through traffic. Work of RailAid and crew is uninterrupted during entire shift. Crane safely lifts 6.9 tons from the car, 8.9 tons on ground . . . readily converts to magnet crane, pile driver, clamshell, dragline, ½-yard shovel or hoe. Learn more about this versatile on-and-off-track RailAid . . . write: Koehring Co., Milwaukee 16, Wisconsin.

KOEHRING **RailAid®**

(Subsidiaries: **KWIK-MIX • PARSONS • JOHNSON***)*





WORKS ON OR OFF THE PROPULSION CAR WITH ALL STANDARD ATTACHMENTS:

lift crane
magnet crane
pile driver
clamshell
dragline
shovel
hoe

58 REV.

HOLAN Hydraulic and Mechanical Ladders

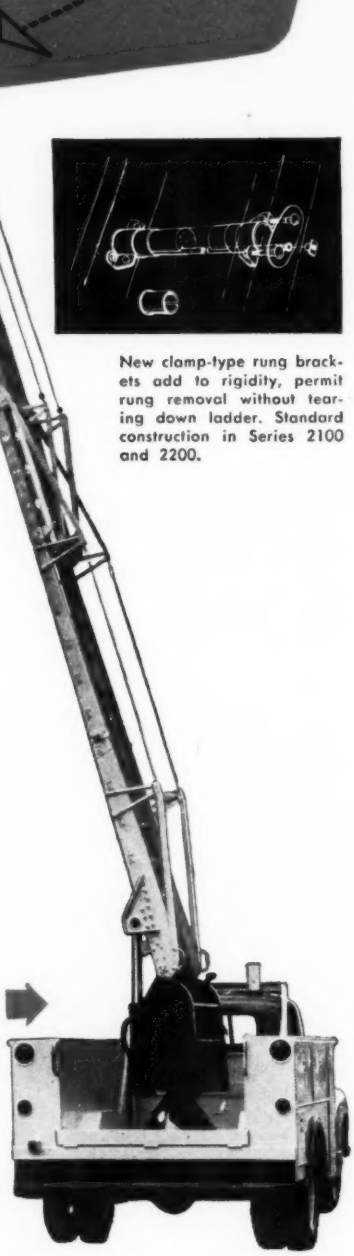
Cutaway section of Series 2200 Ladder

New clamp-type rung brackets add to rigidity, permit rung removal without tearing down ladder. Standard construction in Series 2100 and 2200.

Reaching your objectives

Whether your overhead objectives be construction, maintenance or service, you'll find speed, safety and ease of operation in Holan Ladders, designed to serve your needs. Add to that the time and energy-saving features and the net results are, "MORE HOLAN FIRSTS!"

SERIES 2200 MECHANICAL TYPE AERIAL LADDER—Full 360° rotation, worm and gear operated by hand crank. *Ladder pivot shaft mounted on roller bearings, counterbalance spring cable operates over sheave mounted on roller bearings. One chrome vanadium alloy spring concealed in mast results in fully counterbalanced ladder. Elevation from horizontal to maximum angle of 72° accomplished by 2½ effortless turns of hand crank controlling pinions and gear segments. Fly section extended and retracted by hand operated windlass with brake. Upper and lower sections insulated for 750 volts. Available in three models —23, 27 and 31-ft. ground to platform heights.



SERIES 2100 FULL HYDRAULIC AERIAL LADDER—Hydraulic pressure is powered by individual gasoline engine integral with ladder or by truck-mounted power take-off. 360° Rotation by hydraulic motor driven worm wheel and gear. Fly section operated by hydraulic winch. Large hydraulic cylinder, permitting low working pressure, elevates ladder to infinite number of positions through 75° working range. Choice of 27', 31', or 35' platform heights.

* Another Holan "First"

J. H. HOLAN CORPORATION

MOBILE EQUIPMENT FOR PUBLIC UTILITIES

4100 West 150th Street • Cleveland 11, Ohio

District Sales Representatives

6-03 161st Street, Beechhurst, Queens, New York • 863 Wilson Drive, New Orleans, Louisiana
2754 N. 92nd Street, Milwaukee 10, Wisconsin

Export Representative

COPPERWELD STEEL INTERNATIONAL • 117 Liberty St., New York 6, N. Y., U.S.A.

Distributors

BAKER EQUIPMENT ENGINEERING CO.
Charlotte, N. C. • Columbia, S. C.
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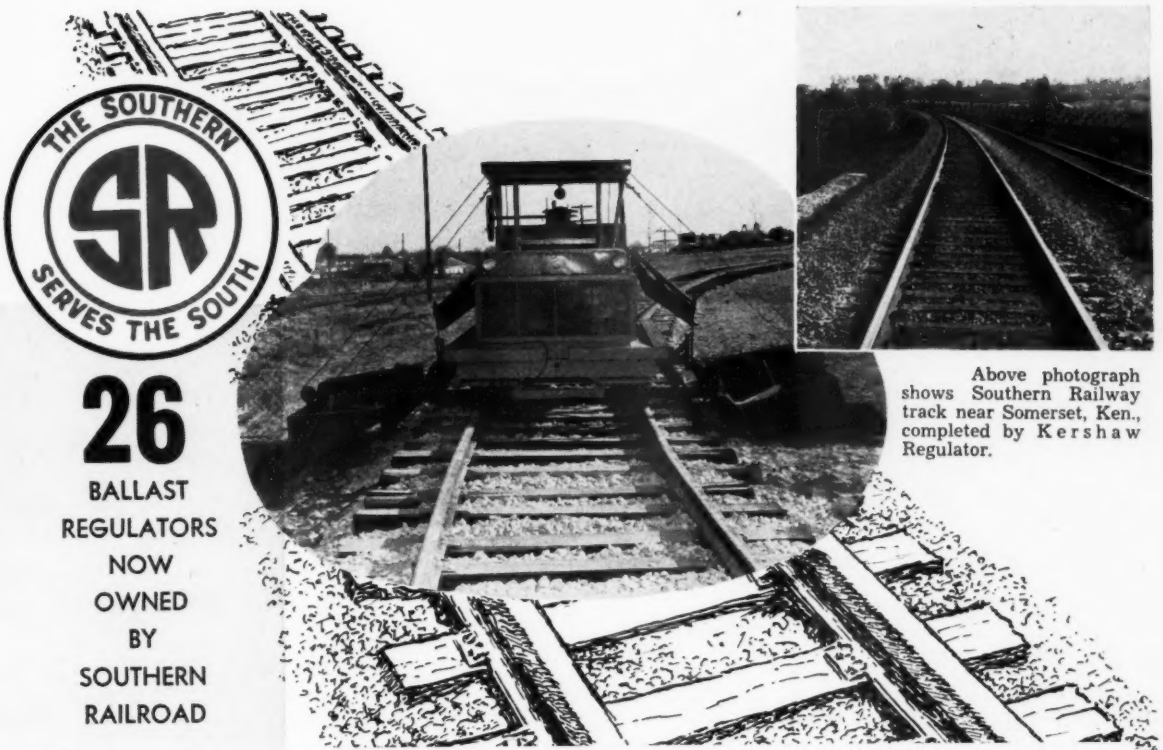
SCHETKY EQUIPMENT CORP.
Portland, Ore.

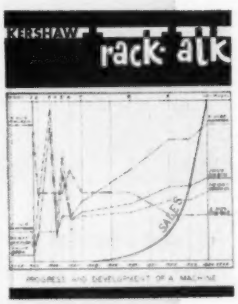


Above photograph shows Southern Railway track near Somerset, Ken., completed by Kershaw Regulator.

26
BALLAST REGULATORS NOW OWNED BY SOUTHERN RAILROAD

Kershaw Helps the *Progressive* SOUTHERN Serve the South

ON December 13, 1951, the Southern Railway System purchased three Kershaw Regulators and put them to work with its surfacing and track dressing gangs. These machines, doing this one operation, proved so successful that now the Southern Railway System has 26 Kershaw Regulators working on the line. Kershaw Manufacturing Co. is proud that one of its products is playing an important part in helping the Progressive Southern Serve the South.



Track Talk—Published every other month by Kershaw Manufacturing Co. Write for your free copy today.

In addition to the Kershaw Ballast Regulator, Scarifier and Plow, Kershaw Manufacturing Co. also constructs such top flight equipment as its Kershaw Kribber, Utility Derrick, Track Crane, Mocar Crane, Hydraulic Jack, Jack-all, Tie Replacer, Track Broom and others.

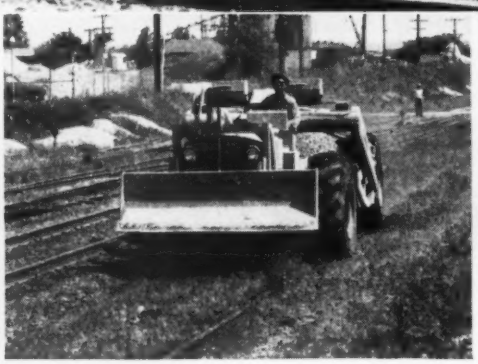
KERSHAW
MANUFACTURING CO. INC.

KERSHAW MANUFACTURING CO., INC. P. O. BOX 510, MONTGOMERY, ALA.

Trackwork Equipment Developed and Proven on the Nation's Railroads

Cutting berm ditch along main-line right-of-way near Chillicothe, Illinois, D Tournapull self-loads root-laced clay . . . heaps up to 5 cu. yds. in less than a minute. With speeds to 28 m.p.h., the one "D" and its one operator completed this ditching job fast, and at a much lower cost than with former methods. "D" eliminated need for a work train and crew.

At approach of traffic "D" drives up on bank. As soon as the line is clear, rig will go back to work. No time is lost deadheading work trains to nearest siding . . . through-traffic is not delayed. Multi-disc 4-wheel air brakes hold rig safely on steep side slope.



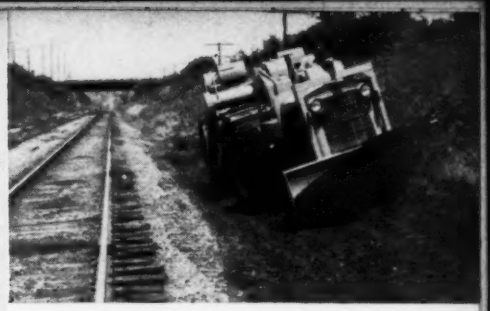
Self-powered moves at speeds to 28 m.p.h. save delays, get more work done. With big low-pressure rubber tires, Tournapull drives along right-of-way without damage to ties or tracks. Simplifies dispatching . . . saves time of loading and unloading . . . goes right to work.

At stockpile, "D" uses its bulldozer blade to side-cast screened rock to level a loading course. Electric-control blade gives fast, smooth dozing action. Rig has plenty of power (122 h.p.) and maneuverability (90° turns in 12' 9" radius) to speed dozing.

LeTourneau-Westinghouse Company PEORIA, ILLINOIS

HOW

Your railroad can cut costs with TOURNAPULLS



Sloping 4-to-1 bank, "D" dozes topsoil from hillside cut. Other jobs . . . *repairing washouts . . . stockpiling coal . . . clearing slides . . . plowing snow . . . clearing right-of-way.* Write for job-proved data on your type of work . . . or, see your LeTourneau Distributor.

Spreading ballast, "D" distributes even layers from 1" to 10" deep . . . can also pile entire load in one spot. Here, operator will later level ballast by lowering bulldozer blade to "float" on the rails and act as depth shoe. 8' 1" blade easily covers gauge of tracks.

Self-loading ballast, Tournapull gets about 4 ½ cu. yds. of 1 ½" rock per load. Power-proportioning differential, which applies 4 times the power to wheel on firmest footing, keeps "D" pulling through loose, soft, or slippery material . . . reduces downtime for weather.

Turning 90° in radius of 12' 9", "D" moves into position for spreading. Rig crosses tracks without blocking . . . does no damage to rails, switches, etc. Big 18.00 x 25 tires deflect load evenly over obstructions . . . do not chamfer ties, trip or damage block signals.

Loading from hopper, Tournapull's square top opening speeds handling. Wash water drains freely from bottom of scraper . . . eliminates hauling unnecessary weight. Rig also can be loaded by shovel or dragline . . . speeds both long and short haul operations.

Tournapull—Trademark Reg. U.S. Pat. Off.
Tournatractor—Trademark DP-155-RR

Send now to: **LeTOURNEAU-WESTINGHOUSE CO., *Peoria, Illinois***

Name_____ **Title**_____

Company_____

☐ **Please tell us more about 9-ton, 122 h.p. D Tournapull.** ☐ **Also send data on 19 m.p.h., 186 h.p. rubber-tired Tournatractor.**

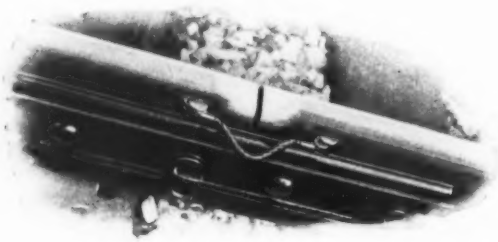
WHAT ARE YOUR REQUIREMENTS FOR END-HARDENED RAIL

Adequate Hardness?

Desired Toughness?

Correct Hardness Pattern?

Best Depth of Hardness?



You get all these with OXWELD'S *methods for oxy-acetylene rail-end hardening*

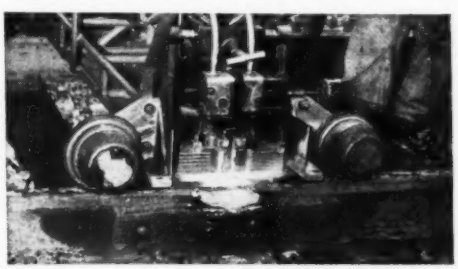
OXWELD'S methods of flame-hardening are backed by 15 years of experience. During that time millions of rail ends have been treated by this tried-and-tested method.

On many railroads it is standard practice to flame-harden rail ends as new steel is laid. This results in considerable savings because additional flagmen are not required and as the signal bonds are not in place it is not necessary to protect them. On other railroads the manual baffle box method has proved to be efficient, especially for small programs.

You cannot afford to overlook the proved economies of OXWELD'S end-hardening methods.

Write for Booklet 7007 which details technical data on end-hardening as well as flame-hardening frogs.

Manual baffle box method of end-hardening is useful in places where traffic is dense.



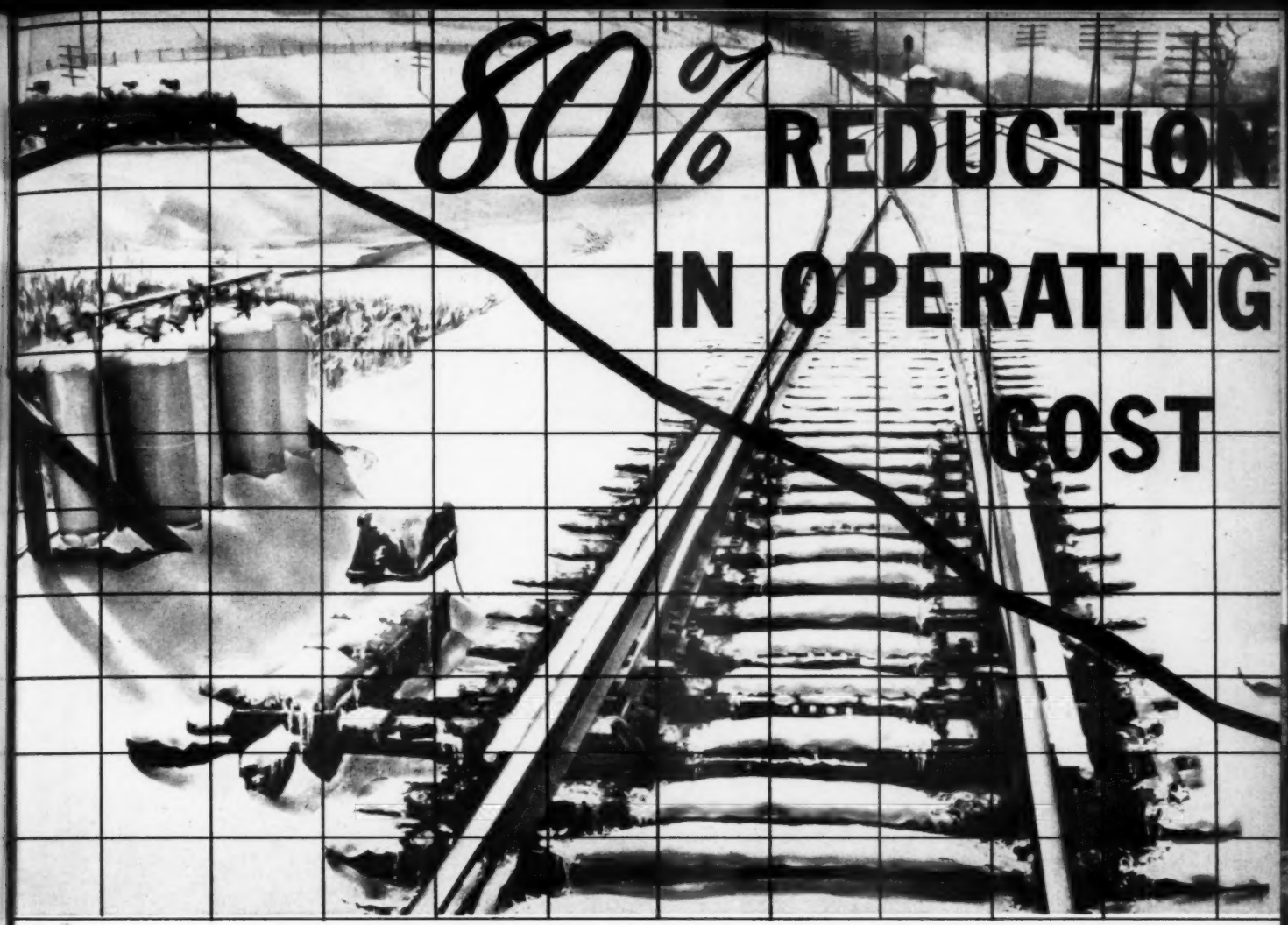
Machine method of end-hardening gives high production at low cost.

OXWELD RAILROAD SERVICE COMPANY
A Division of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York
In Canada:
Canadian Railroad Service Company, Limited, Toronto

OXWELD RAILROAD SERVICE

SINCE 1912—THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

The term "Oxweld" is a registered trade-mark of Union Carbide and Carbon Corporation.



With Controlled Propane Switch Heaters vs. Manual Removal of Snow and Ice

Here Are the Figures —

Installation on 57 switches and 2 derails.

Cost of manual removal of snow and ice	$58,663.00
Cost of snow and ice removal with controlled propane switch heaters	11,692.00
Savings in operating cost or 80%	$46,971.00

What is switch protection costing you? The figures in an economics report released by a prominent eastern road (name on request) are revealing. *Before* and *after* figures on an installation of remote-controlled propane gas switch heaters on 57 switches and 2 derails show a reduction in annual operating expense of 80%, with an annual return of 55% on the investment.

On road after road, the economies and convenience of remote-controlled RAIL-TEL Switch Heaters—have been proved in the field. Of all known devices for controlled snow and ice protection, the propane gas switch heater alone functions at all times regardless of power interruptions, etc.

Now is the time to consider your needs for next winter. *Write*

The RAILS Company

RAILS-CO

Hoboken · Chicago · St. Louis

No. 007 of a series

RAILWAY TRACK and STRUCTURES

SIMMONS-BOARDMAN PUBLISHING CORPORATION

79 WEST MONROE STREET
CHICAGO 3, ILL.

July 1, 1954

Subject: Contributed Articles

Dear Readers:

Should feature articles be written by members of the editorial staff or by contributors? We are constantly confronted with this question. All the editors of this magazine, being technically trained and having had years of practical experience in maintenance-of-way work, are qualified to prepare articles on almost any subject of interest to our readers, basing them on information obtained in the field and through interviews with railroad men. In fact, the writing of feature articles is one of the things we are paid for and all of us do as much writing as time and circumstances will permit.

Even so, there are occasions when the use of contributed articles seems advisable. I am thinking, for one thing, of those situations where the particular subject involves the presentation of ideas gained by one man over many years of experience. An example is the series of articles by Leo C. Blanchard on lining track, which is concluded in this issue. Even if an editor had spent many days with Mr. Blanchard (or any other track supervisory officer, for that matter) I doubt that he would be able to obtain the "feel" of the subject that is one of the appealing qualities that shows up in the articles in this series.

I am sure this quality has not escaped the readers, and equally sure they have found it as pleasing as I have. Another word for it is "style" -- style in this case enriched by enthusiasm for the subject. This matter of style, incidentally, is very important. If all articles in a magazine were to be written by members of the staff they would be apt to have a sameness of expression that conceivably would make for monotonous reading. The interspercing of contributed articles here and there would certainly counteract any tendency in this direction.

There are other reasons why nearly every issue of this publication contains at least one "by-line" article. Nevertheless, it is a fact that the larger part of the feature section is staff written. This is the way we exercise control over the character and quality of the material presented. Each issue of the magazine must contain a balanced "diet" of feature material, and to this end it is necessary to have a great deal of flexibility in making writing assignments. In other words, when we want an article we usually want it pretty badly, and in that case there is a big advantage in having available a staff of trained editors.

The best answer that can be given to the question raised in the first sentence of this letter is that it depends on the circumstances. It would, of course, be impossible to publish this magazine month after month without the services of full-time editors with special training in our field. At the same time a sprinkling of contributed articles adds spice and variety to the pages. The trick is to achieve a fine balance between the two types of material, and this is an objective that is constantly before us.

Yours sincerely,

Merwin H. Dick

Editor

MHD:lw

Members: Audit Bureau of Circulations and Associated Business Publications

Announcing

THE NEW

150-HP CAT* DW15 TRACTOR

the answer to important earthmoving needs!

Do you need a fast, four-wheel tractor that can work effectively in narrow, confined areas, yet keep pace with larger units?

The DW15 is your answer! It has ten forward speeds up to 24 m.p.h. . . . up to 31.3 m.p.h. with optional gears. With matching scraper, it carries up to 15 cu. yds. per load at these speeds. It can maneuver in tight cut, fill or haul road situations.

Do you need a wheeled tractor with power and exceptional lugging ability?

The DW15 is your answer! Its new 150-HP diesel engine is matched to its weight and capacity. Its heavy-duty clutch and transmission match the engine. Engine, clutch and transmission are designed and built by one manufacturer.

Do you need a unit that will produce all day without exhausting operators?

The DW15 is your answer! The hydraulic booster makes steering easy . . . only eight pounds of steering effort are needed. Air-boosted flywheel clutch, constant-mesh transmission, large-capacity air brakes, anti-jackknife protection and a comfortable bucket-type seat with hydraulic snubber provide the operator with safe, easy operation.

Do you need a tractor that will give you a profitable day's production, day in and day out?

The DW15 is your answer! Designed and built by Caterpillar, it is available with a complete line of matched units . . . scrapers, bottom dump and side dump wagons.

Call your Caterpillar Dealer today. He'll give you complete details on this new high-production, high-speed earthmoving machine. He'll show you the DW15 in action.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

THE RACOR Snow Blower

EASY, SAFE AND ECONOMICAL SNOW REMOVAL FROM SWITCHES BY COMPRESSED AIR

Easy to Install • Easy to Maintain • Safe and Economical to Operate

ADAPTABLE TO REMOTE CONTROL ELIMINATES THE NEED FOR MANUAL ATTENTION DURING SNOW STORMS

The RACOR SNOW BLOWER is a mechanical device designed to keep switches clear of snow by the use of intermittent blasts of compressed air. Simple in construction, it consists of a source of compressed air, an air filter, an anti-freeze injector, a cycling tank, an air switch, an air valve and two manifolds equipped with adjustable nozzles.

SOURCE OF AIR SUPPLY

The compressed air can be supplied either from a small individual compressor for a particular switch or from a larger compressor with sufficient capacity to serve several switches; or from a central source of supply. The manifolds are attached to the stock rails of switches in such a manner that there is no interference when the switch points are thrown.

HOW IT WORKS

The air passes through the filter, the anti-freeze injector, the cycling tank and then through connecting pipes into the manifolds. The air speed created by the blowing cycle, at a rate of approximately sixty miles an hour, removes snow, dirt, etc., out of the opening between the switch points and the stock rails. The air switch is set to operate the air valve when predetermined pressures are reached in the cycling tank. This cycle is continually repeated and can be varied within certain limits, but the usual cycle develops a blowing time of about one-tenth of the time of the cycle — the blowing taking about four seconds with the cycling tank re-charging in about thirty-six seconds. This timing was found to be adequate to keep a switch clear of snow during a total snowfall of 64½" in six days, with an air supply of approximately 100 p.s.i.

Electric cycling can be substituted for pneumatic cycling by using an electric timing device that controls a solenoid valve. This timing device, when employed, is connected directly to the air supply and will eliminate the use of the cycling tank.

RACOR engineers will gladly recommend the type of cycling best suited for any particular location.

ADVANTAGES OF RACOR SNOW BLOWER

The RACOR SNOW BLOWER has many advantages, the more important being: *Extremely low operating costs* — by far the lowest of any other snow removal method. *No melted snow*, hence no problem of drainage or icing or necessity of removal of ice formed from melted snow. *No flame to blow out* from high winds or passing trains. *No danger of fire* as a result of leaking oil from tank cars or from diesel engines that might stop over switch. *No chance to burn up ties or insulation.* If desired, the RACOR SNOW BLOWER can be operated by remote control.

Foreign matter such as dirt, sand and top soil which might blow into the switch with snow, is blown out and not left as a residue, as is often the case when snow is melted through heating methods. The introduction of alcohol in atomized form through the anti-freeze injector, combined with the effect of blowing dry compressed air has proved very effective during sleet and freezing-rain conditions.

SAFETY

Safety is perhaps the most important advantage of all, as employees are not required to manually clear switches under traffic during snowstorms, usually the period of poorest visibility.

WRITE FOR DESCRIPTIVE LITERATURE

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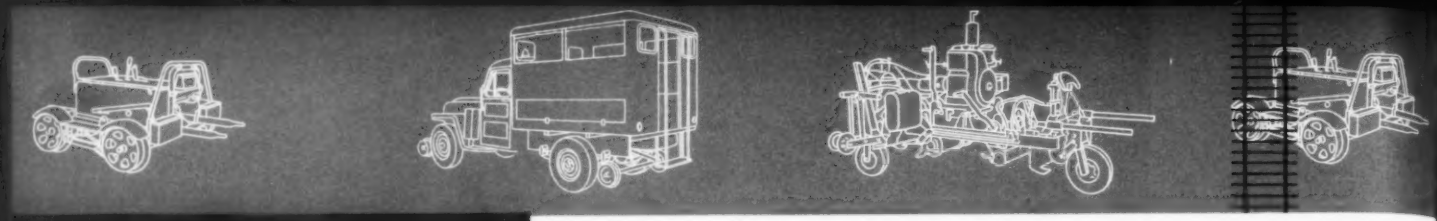

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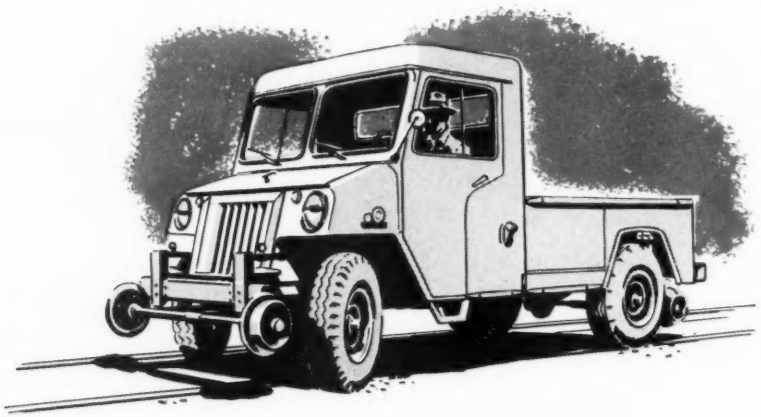

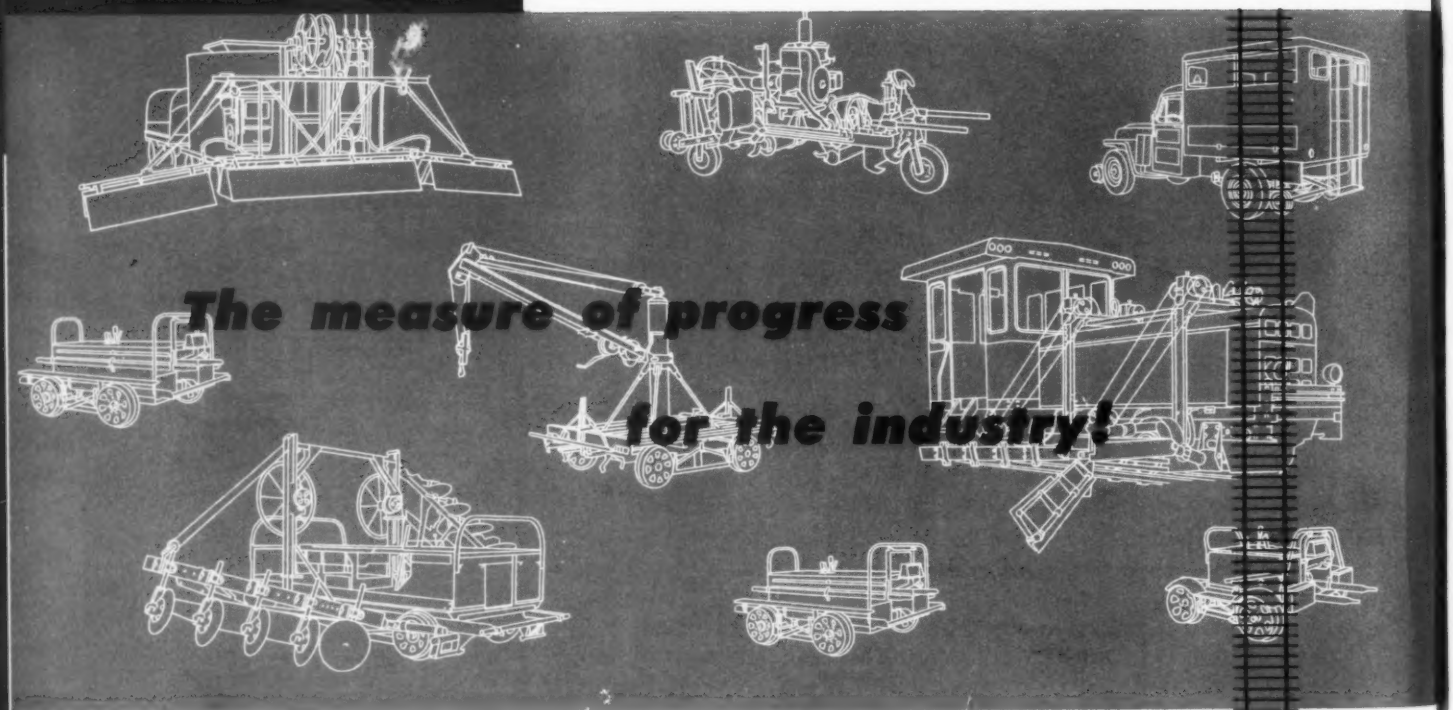

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30 Church Street

Washington, D. C., 4
1081 National Press Bldg.

Cleveland 13,
Terminal Tower

Portland 5,
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Subscription price to railroad employees only in the U.S., U.S. possessions and Canada, $2.00 one year, $3 two years, payable in advance and postage free. All other countries, $8 one year, $16 two years. Single copies 50¢. Address correspondence concerning subscriptions to Robert G. Lewis, vice-president, 30 Church Street, New York 7.

Member of the Associated Business Papers (A.B.P.) and of the Audit Bureau of Circulations (A.B.C.), and is indexed by Engineering Index, Inc.

PRINTED IN U.S.A.

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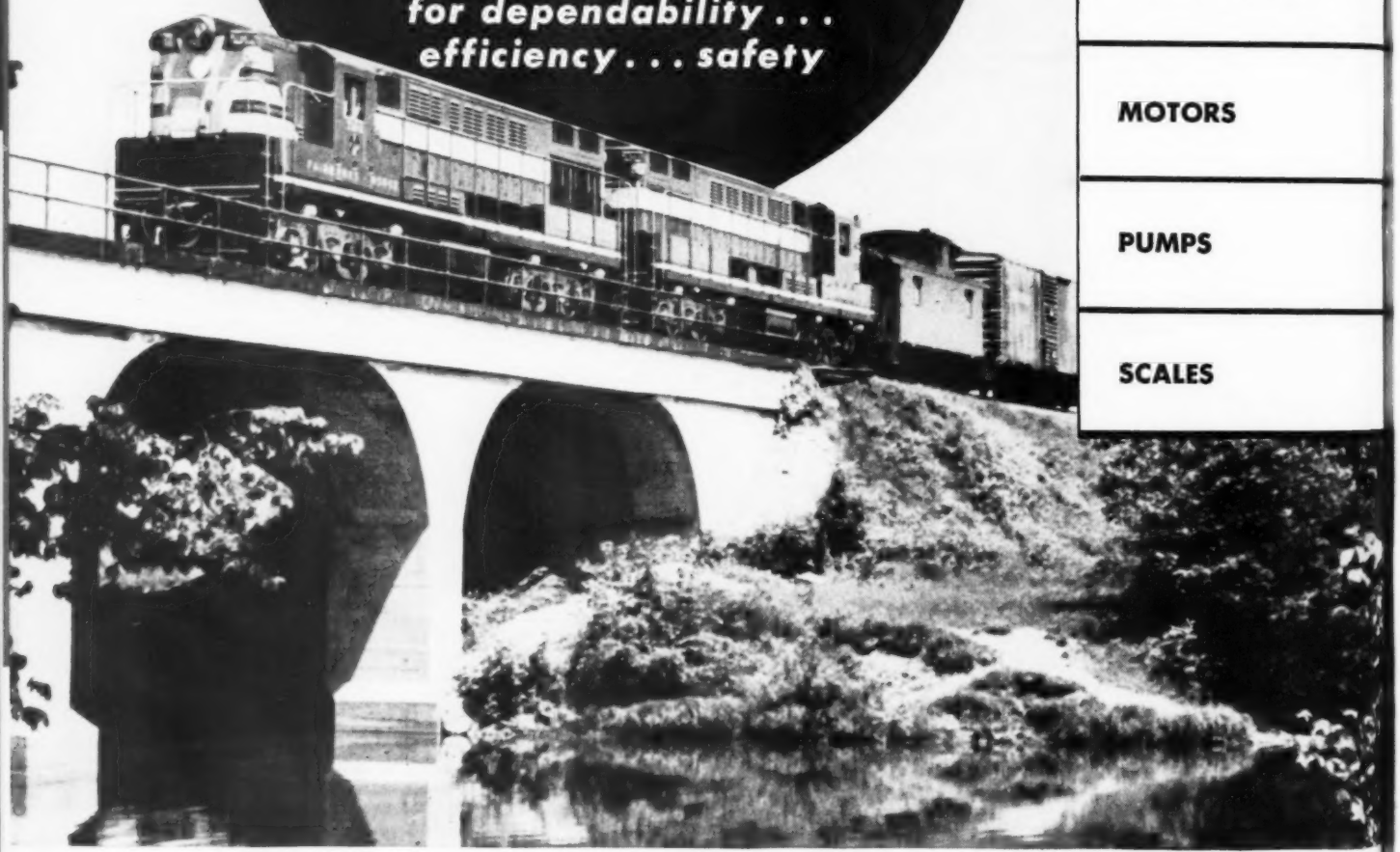

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A Job for the M/W Man

Events of the present working season have demonstrated that, when business declines, maintenance-of-way activities are among the first to suffer on most roads when retrenchment seems necessary. This policy of cutting M/W expenses indiscriminately at the first sign of a dip in traffic amounts almost to a tradition. M/W men as a whole have always regarded the policy as regrettable and unwise, but have felt in general that there was nothing they could do but accept it.

We feel the time has come for M/W men to reappraise the situation in this respect. This feeling stems from the fact that ample proof is now available to demonstrate a truth long recognized by maintenance officers generally, namely, that in the long run it is more economical to carry out adequate programs on an orderly, systematic basis year after year rather than to pursue a "feast or famine" policy.

The managements of several roads have been convinced by their M/W people that there is much to be gained by having adequate maintenance programs every year and that programs projected early in the year should be carried out without substantial downward revision even though a drop in traffic occurs. Prominent among these railroads are the Lackawanna and the New York Central. In dealing with their managements regarding this matter, maintenance officers on these roads have pointed out that, regardless of traffic volume, a minimum amount of maintenance work is required, that if this minimum isn't done this year it will have to be performed later, and that to have a consistent program every year based on the needs of the property will result in the long run in greater efficiency with accompanying lower costs.

The fact that the managements of a small number of roads have seen the light is at least a "foot in the door," providing examples to be cited on other lines by M/W officers campaigning for stabilized maintenance programs. It is important to remember that, if they wish to make progress in this direction, maintenance men must do the campaigning. Nobody else is going to do it for them.

No Substitute for Experience

At this time of the year, youth, fresh from school and college, invades the railroad field. Many of these individuals have never before worked on a railroad. They do not have the knowledge of safety and safe practices that years of education and experience have given experienced workers.

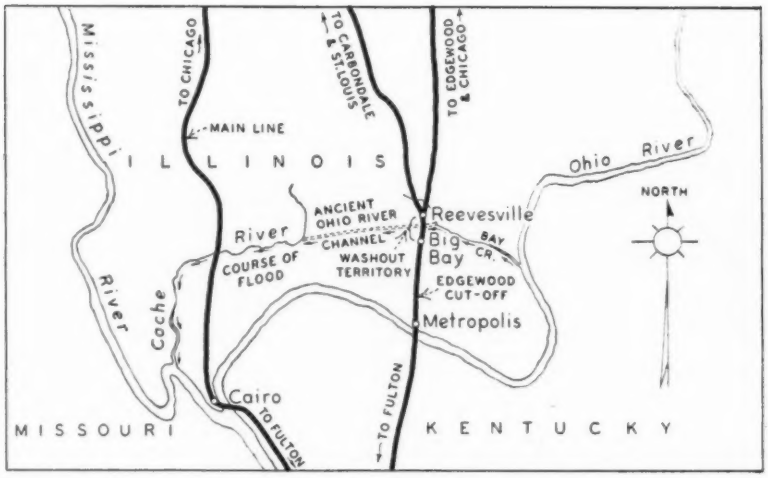
David Hume in his essays "Concerning Human Understanding" developed the thesis that no matter how strong a man's natural reason and ability may be, he is unable to discover by himself any of the causes and effects inherent in an object or situation entirely new to him. He illustrates the point with this thought: "Adam, though his rational faculties be supposed, at the very first, entirely perfect, could not have inferred from the fluidity and transparency of water that it would suffocate him, or from the light and warmth of fire that it would consume him."

Can we assume that the neophyte in railroad experience brings with him any better judgment concerning the perils that are hidden in the methods and machines that he is called upon to use and handle, that is, if he is unaided by the friendly council of mature thought and experience.

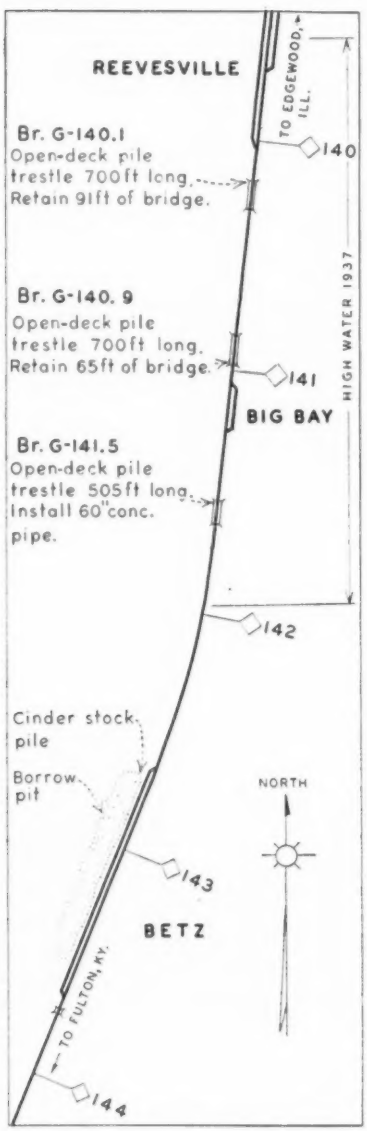
Wise council and continual watchfulness must be the responsibility of the supervisor. His store of the knowledge of safe practice, gained through experience, makes him the obvious instructor of the uninitiated. This is a responsibility that he cannot delegate but must accept as one of the obligations of his position.

Production-Line

Coordination of loading, hauling and unloading permits the handling by work train of as many as 84 loads of bridge-filling material in each eight-hour work period. Work progresses smoothly, without interruption to traffic, despite a maximum line haul of three miles, on a heavy-traffic single-track line.



FLOOD IN 1937 washed out parts of the Edgewood cut-off, and originated from back water in Bay creek, which overflowed and entered an old channel of the Ohio.



MATERIAL was transported from a borrow pit at Betz siding to bridges G140.1, G140.9 and G141.5 where it was used for making fill.

● A question inevitably arises when bridges reach their retirement age: Must they be replaced? Three long open-deck pile trestles, located on the Illinois Central, recently reached this condition. Investigation disclosed that these structures were no longer required to handle flood conditions which had dictated their original length. It was also learned that they were handling local drainage only. Further investigation disclosed that an adequate quantity of material suitable for filling these bridges was readily available. The obvious decision; shorten them.

The three structures involved are located on the road's Edgewood cut-off, which is a vital link in the Illinois Central's north and south route between Chicago and St. Louis and New Orleans. This cut-off, known as the Bluford district, is a single-track line built for freight service. It is currently handling about 24 heavy freight trains daily.

At the time of the record flood in the Ohio river in January 1937 water crested four feet above the tracks of the Edgewood cut-off between Reevesville and Big Bay, Ill. This high water resulted when back water of the Ohio filled Bay creek and topped a divide, located east of the cut-off, between this creek and an ancient channel of the Ohio, followed this old channel across the lower tip of the State of Illinois, entered the Cache river which drains into the Mississippi.

When repairing the damage to the Edgewood cut-off caused by this flood, three bridges—G-140.1 (700 ft long), G-140.9 (700 ft long), and G-141.5 (505 ft long)—were constructed. (see map). These bridges, with an aggregate length of 1905 ft, replaced previously existing bridges having an overall length of 196 ft, which were washed out during the flood. The grade of the track was eventually raised four feet above the original elevation.

During the years since the flood, the federal government has completed a levee along the crest of the old divide to prevent a recurrence of the disaster of 1937. Since the construction of the levee removed the necessity for these long bridge openings, it was decided in the interest of economy to restore them to about their original lengths, such lengths being dictated only by the local drainage of the streams which passed under them. A consideration in arriving at this decision was the fact that it would have been necessary to renew the decks of the structures if they had been kept in service.

Cut at Borrow Pit Widened

The necessary quality and quantity of filling material (about 24,000 cu yd) was found to be available adjacent to a sidetrack laid through a cut about three miles south of bridge G-140.1, which is the most northerly of the three structures. As a preliminary step the cut on the side adjacent to the sidetrack was widened a sufficient amount to provide clearance for the operation of loading equipment between the cars and the face of the cut.

To supply spoil for the loading operation, bulldozers moved the

BULLDOZERS moved filling material from borrow pit to edge of cut and pushed it over.

DIESEL-POWERED shovels, working at intervals through the cut, loaded the loose material in air-dump cars.

Bridge Filling

material from the borrow pit, located in the area between the top of the cut and the right-of-way line, to a windrow along the upper edge of the cut. This loose material was then pushed over the edge of the cut to place it within reach of the loading equipment.

Two diesel-powered crawler shovels, equipped with ¾-cu yd buckets and operating in the widened cut, loaded the loose material into cars. In addition to these two shovels, two draglines, each equipped with a ¾-cu yd bucket, worked at the southerly end of the pit, loading directly from the material in the bottom of the borrow pit.

The work train consisted of a locomotive, eleven 20-cu yd struck-capacity air-dump cars, a compressor car, seventeen 30-cu yd air-dump cars, and two cabooses, one at each end. When the work train was backed into the siding, one of the shovels placed a large dipperfull of cinders in each car as it passed. The purpose of the cinders, which were then spread by hand over the bottoms of the cars, was to cause the cars to dump clean when unloaded.

For loading purposes a cut of five 30-yd air-dump cars was spotted opposite each of the two draglines at the southerly end of the borrow pit. The remainder of the train was then pulled back intact to the northerly end of the pit. During the loading operations each unit of loading equipment traveled the length of its respective cut of cars.

DRAGLINES, working from the top at south end of borrow pit, were also used for the loading work.

The average loading rate for the shovels was 12 min for a 30-yd car. The loading rate for the draglines was somewhat slower due to the fact that this equipment was working with compacted material. However, because the cuts of cars were balanced in accordance with the respective production rates of the loading units, all the machines generally finished their loading assignments almost simultaneously. Approximately 80 min was required to spot, load and recouple the train.

Compressor Car Furnishes Air

A factor which loomed large in the efficiency of the operation was the use of the compressor car. It is reported that the extra supply of air produced by this car did much to speed up the unloading operation. Reduction of the load on the

FILL MATERIAL was unloaded at bridge with two spots of the train.

COMPRESSOR car provided air for dumping all but the head cars of the train, which were dumped from the train line.

CINDERS were spread over the bottoms of cars in order to prevent fill material from sticking.

JORDAN SPREADER and a spreader-ditcher were coupled back-to-back for use in forming the . . .

. . . **COMPLETED** fill which was then ready for removal of deck and placing of ballast after settlement.

train line eliminated emergency brake applications, and the attendant operational delays, which it is felt would have resulted from low air.

As set up the compressor car furnished air for dumping the entire train with the exception of the four cars nearest the engine which were dumped by air from the train line. The compressor car itself was located at about the center of the train and consisted of a flat car mounting a 210-cu ft compressor, a 105-cu ft compressor (for auxiliary standby service) and a 4-ft by 10-ft air reservoir.

On arrival at the bridge, the entire train was pulled up so that the rear half of the train was spotted at the dumping location. This section was dumped first, after which the train was respotted and the forward half dumped.

The round trip from the pit to the unloading point and return required an average of approximately 40 min. Thus, a complete cycle required approximately two hours, permitting, with an allowance for delays, an average of about three round trips per working day.

The fill material handled on this project was excavated, loaded, transported, and placed at a cost of 50 cents per cu yd.

During the construction of the embankments, and between trips of the work train, a crawler tractor equipped with a dozer blade spread the filling material as necessary. A Jordan spreader and a spreader-ditcher, coupled back to back to permit them to be operated in either direction, were used to complete the formation of the fill. Back spreading was resorted to with the spreader to force the loose fill material under the track when the working space below the bridge was inadequate to permit performing this operation with the dozer.

Before filling operations were started a length of scrap cable was looped around one end of each of the caps and the ends nailed to a tie directly over the bent. The objective was to use these pieces of cable to pull the caps when the decks of the bridges are removed. Following removal of the deck the track will be ballasted. The work of removing the deck and ballasting the track will be undertaken this year after the fill has had sufficient time to settle and consolidate itself.

The work is being carried out under the direction of C. I. Van Arsdalen, division engineer, Carbondale, Ill., and under the direct supervision of L. H. White, supervisor of bridges and buildings.

Use of Optical Track Lining Instruments . . .

OPTICAL LINING instruments are implements of the trade. The author is demonstrating two modern instruments. The one at the left is a Hayco Track Lining Scope and the one at the right is a National Optical Trackliner.

The Art of Track Lining . . .

Part III—Secrets of the Trade

In this final installment of the series, Mr. Blanchard describes instrument lining, tells how to handle tight rail and sun-kinks, gives tips for increasing speed and accuracy, outlines the proper procedure when lining through highway crossings and turnouts, and tells how to line track employing only a section foreman and two men.

By L. C. Blanchard
Roadmaster
Chicago, Milwaukee, St. Paul & Pacific
Minneapolis, Minn.

● "What has become of the old-time track liner?" is a question often asked. Actually, good track liners have always been scarce. Could these so-called old-time track liners compete favorably with present-day lining methods where an optical instrument is used? Well, just ask yourself "How would a Kentucky rifleman of the Daniel Boone period, using his iron sights, fare in competition with a present-day riffleman using a telescopic sight?" If the two riflemen were of equal ability, the man with the modern sights would have the advantage. On the other hand, it is uncanny what some of those Kentucky riflemen could do with the equipment they had to use. It is the same with track liners. The expert will do better with the eye alone than a novice can do with all of the mechanical aids available.

Using an Instrument on Tangents

To be a finished track liner, any man should have a working knowledge of the optical lining instrument. After using an instrument for awhile, even a good eye liner will dread being caught without one. It is so much easier, and is of such proven accuracy, that it tends to rob him of his confidence in eye lining. Nevertheless, and in spite of it, he will be a better eye liner for having had the experience. It is almost an impossibility for a man ever to become a good eye liner after having first started with an instrument. I have known one or two exceptions to this, but it takes a man of fine determination to accomplish it.

While this writer has lined well over 1,000 miles of track by eye alone, he has, since 1934, lined several hundred miles with the aid of one of these optical instruments. More and more of the railroads are furnishing them for out-of-face lining. This is fine and a step in the right direction. As the speeds of trains increase, the more important good line becomes to good riding track. A really good eye liner can provide for speeds up to about 70 mph on tangent track. For speeds higher than that the track should be lined by instrument.

The older instruments manufactured several years ago had many faults. The tripods were not rigid enough to withstand moderate winds and they would shake. Also, the side bearings would wear rapidly and the instrument would become inaccurate. To add to these troubles, the cross hair would break. Much of the time we would take a sight down the track with the instrument, then set it out and line by eye. Many times I have used a spider web from a nearby stock-

Sighting Aids for Instrument Lining . . .

A TARGET BOARD is a fine aid for making instrument lining easier and more accurate.

SECOND SIGHTING TARGET, although used by few track liners, is an excellent aid at the point of throw.

yard from which I made a new vertical cross hair. It worked pretty good, too. The machines being purchased today with rigid tripods, and with accurate bearings and sunshades to minimize sun glare and heat waves, are a dream by comparison.

Setting Up the Instrument

Now for a discussion of the lining instruments. Just as with eye lining, it is most important to get started right. Pick out a spot that seems to be about right for spotting the instrument, then set up and level it. Adjust its cross hair so that it shows plainly. Next, sight the instrument and adjust the cross hair to fit along the gage side of the rail at the most distant point you can see clearly. If possible, have a target board set up at the distant point so that you will have a permanent point of reference.

Now, sight the instrument to the rail a few feet ahead of the instrument. If the cross hair touches the gage edge of the rail at that point also, your setting is correct. If it does not, you will have to check all of the adjustments again, and it may be necessary to move the instrument back a few feet to try again. Do not attempt to line until the cross hair fits the rail at both reference points.

If you are careless about this, you will have unsightly jogs in your finished line.

Should you be working with rails 33 ft or less in length, you probably can have the men throw the track with the bars at each joint and center. However, if you are working with 39-ft rails, you should make three throws to each rail length. This will eliminate time-wasting back-up movements for smoothing up tiny kinks in the rail.

Whether lining by eye or instrument, try in every way possible to eliminate the necessity for calling the men back to fix a spot that is not right. The men hate being called back and it is time-consuming. On the other hand, don't get careless and fail to back up when the need is indicated. Nothing is worse than a sloppy job of track lining.

Aids for Instrument Lining

There are two very fine aids to make instrument lining easier and more accurate. The first is a large target board having red and white squares forming a cross directly above the gage side of the rail, or to where the gage edge of the rail should be when the track is lined. This is set to coincide with the line stakes set by the engineering department. If you are lining without stakes, use your instrument and best judgment in setting the target board. The point is, the target board gives you a good reference point in case your instrument gets knocked out of adjustment, thus making it necessary to reposition it. You should refer to this target board frequently to make sure the rail has not moved under your instrument and thrown it off line.

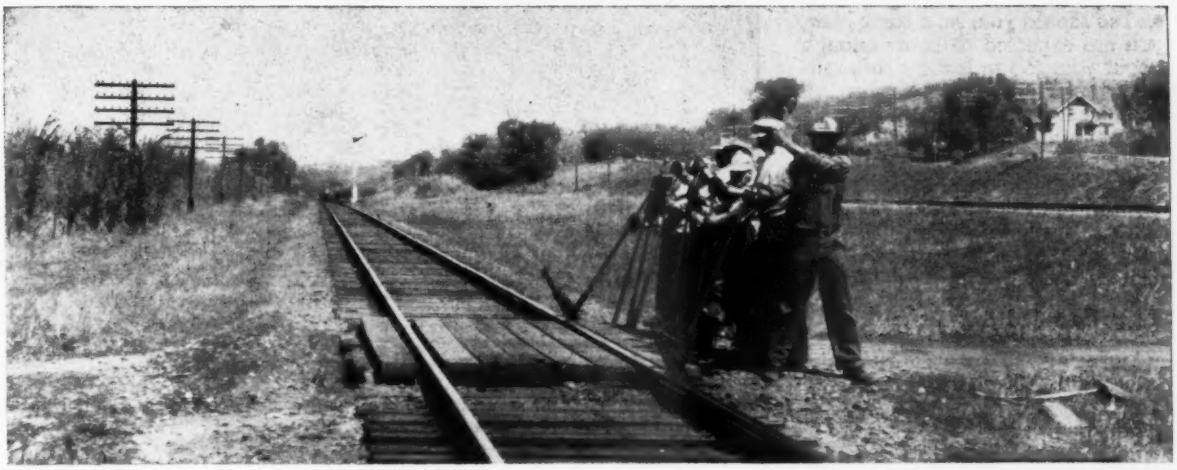
Then there is a second sighting target that is used by very few liners, but which is an excellent aid just the same. It is a tiny stick, ½ in thick by 1 in wide and 5 ft long. It has a metal stop on the underside, similar to a track gage, to fit against the rail. Directly above this stop, coinciding with the gage side of the rail, is a vertical groove made with a hand saw. It is painted white on one side of the groove and red on the other.

This second target board is used at the point of throw. One man holds it against the line rail, or it can be held by a spring clip; when the saw groove moves into the cross hair on the instrument, the throw is completed. This can be seen much more clearly than the raw edge of the rails and is accurate for a much greater distance. When sighting the edge of the rail without it, you should move your instrument forward every 8 to 10 rail lengths, as that is about as far as you can see accurately with one setting. When using the tiny target stick, you can stretch this distance up to 12 to 15 rail lengths. Don't forget to provide some means of warning motors cars so that they won't run over your targets.

Working with Center Stakes

All target and level boards used by a track liner should have some device for checking the tack head on center stakes. Many use a steel pin for this purpose. This is alright except that, under rough use, the pin will bend or become loose in its moorings. The best device for sighting is a groove sawed in the side of the board to a depth of about ⅛ in. Such a groove is just as accurate as a peep hole, and a lot easier to use. Be sure to use a carpenter's square when making this groove, because it must be at a 90-deg angle with the horizontal plane of the board. Also, when using any of these boards with center stakes, the board must be level for obtaining an accurate sighting on the center stake. If the target board does not carry a built-in level, you should provide yourself with a

Some Helpful Suggestions and Useful Tricks for Making a Track Lining Job Easier . . .



pocket level and use it to check the horizontal plane. A little experimenting will prove to you how important this matter is.

When lining to center stakes on tangent track, it is customary to place the stakes about 300 ft apart. Under such circumstances, it is convenient to use two large target boards with your lining instrument. As you close in on the first board, it can be moved ahead with no interference to your lining progress. Further, it serves as a double check by which you will notice if one of the stakes has been moved or tampered with. If the boards fail to match up on the two stakes, try reversing them to make sure the boards are identical. If, after reversing them, you get the same result as before, the trouble is with the stakes.

You should examine the stakes for damage from dragging equipment or other tampering. If they appear all right, there is a possibility that the civil engineer used this point to "break tangent." If, after investigation, the trouble is not readily apparent, disregard the nearest target board and very gradually turn your line to match with the more distant target. On your next setting of both target boards, they should line up very closely. If they do not, call on the engineering department to send out a man to investigate. Do not tamper with the center stakes yourself. If you think a stake is off line, mark the rail with yellow keel at that point to identify the stake and also to protect yourself in case you are questioned about the alinement at that point.

Now and then you will run into one or more center stakes in either tangent or curved track that are

ABOVE—Highway crossings may need lining. This view suggests a method for moving a crossing without removing the planks. Note trench at ends of ties.

RIGHT—Groove, scored in the side of a level board, makes this tool helpful in sighting a track throw from tack in stake.

BELOW—Small over-throws can be corrected by having only half of the men change their bars to the other rail.

not right. The engineering department personnel should expect this, and so should you. As a track liner, you are expected to know enough about your job to leave a safe railroad under any circumstances. An occasional wrong stake is nothing to get excited about. Just mark it and proceed with your work. If you run into what appears to be a really bad job of center staking, do what is necessary to maintain a safe railroad and call for a recheck of the center stakes.

Tight Rail and Sun-Kinks

Surfacing and spotting gangs get into territory having tight rail and experience trouble with sun-kinks. When one occurs, the sun-kink is usually turned over to the lining foreman for handling so that the progress of the main gang will not be interrupted. When attempting to straighten out a sun-kink, you must place your gang at the exact middle of the kink. If you have them a little to one side, the track will just roll away from you and get worse instead of better. If you catch it at the exact center of the kink, you sometimes can straighten out a rather bad one. If luck is with you and you do get it straight, have the men shovel ballast onto the center of the track to hold it down before it can get away again. Ballast thrown between the rails will do more to hold a sun-kink in place than the same amount of material piled against the ends of the ties.

Should the sun-kink be too bad to straighten out immediately, you have the option of cutting in a rail or of lining in a "shoo-fly." In other words, line in a letter "S" to let the trains over the track until after sundown, when it may be possible to line it out in the cool of the evening.

When you have advance warning that you will be working in sun-kink territory, it is best to provide yourself with a piece of rail that can be used to cut in as necessary. One piece of rail will last for several sun-kinks. Here is the trick: You must cut out a piece from the track rail which is two or three inches longer than the one you have on hand. With the cut piece removed and your spare piece installed, you install the recovered piece in the opposite rail by cutting out another piece of rail that is two or three inches longer than the one you have, and you end up with a piece of rail that is now about six inches longer than the first rail you had as a spare. Three inches is plenty to cut out for the very worst sun-kink. In fact, you will probably have to do some driving of the rail to close the gap.

TRACK-LINING DEVICES of several types are being used by this gang. The galvanized units, which are pictured above, are Ureco liners.

Speed and Accuracy Hints

A good track liner will attract good men to his lining gang because they respect both him and his ability. A poor track liner will have a hard time holding men. More temper is lost either by the foreman or the men on a lining gang than in any other phase of extra-gang operation. A foreman who cannot keep his own temper under control will never have a good lining gang. The work is so exacting that it leads to irritation. A foreman should be firm but patient. When things get too bad, he should have the men stop work for a smoke and, if possible, have someone tell a story that will get everyone laughing. After the tension is broken, explain what it is you want, then start working again.

Look away from the track as frequently as possible to rest your eyes and to keep them from watering. Signal your men to move to the next throw point, then look away at some green foliage, if possible. When the men are ready for making the throw, look back quickly and concentrate long enough to accomplish a perfect throw, then signal the men on while you look away again. If you line to the system I have outlined, you won't have to stare at the rail constantly and worry about what your next throw is going to be. As each throw is made, it sharply defines what the next throw is to be. Have patience and the next one will reveal itself.

When working through a long swing, the tendency is to slack off and not throw quite far enough. To counteract this, make an occasional throw a little strong; make the next throw ahead and, if it still appears to be a little too much, have the men step back to a point between the two throws and touch it back just a little. This will straighten out both throws and will reassure you that you are holding to a straight line. Likewise, if you should make a throw a little too strong, make the next one ahead, then drop back between the two for a touch back. You will be surprised how nicely it will straighten out.

Disposition of the Men

When it is necessary to touch back a small overthrow, instead of having the whole gang change around for a throw in the opposite direction, simply have the men standing between the rails (half the gang), reverse their bars and make the line adjustment. This saves the necessity of having all the men stepping over the rail and again possibly overthrowing.

Do not work any more men in the lining gang than you actually need to throw the track. Too many men will waste time by overthrowing. If the track is moving easily, do not attempt to make it all in one heave of the bars. Two or three light throws are much better and will save a lot of time correcting overthrows.

If the track is so heavy that it requires more than 12 men to throw it, I suggest that you trade the lining bars for track-liner devices. Use four track liners with two men to each liner. This combination is more powerful than 16 men with bars, and will move just about any track that is movable. If needed, have two additional men go ahead and make holes for the track liners.

TWO MEN, with track jacks, and a foreman constitute a team that lines more track in a year than is generally realized.

NOTCHES cut in foot of rack bar permit lining without digging jack holes.

For this type of work you will want a track liner that is quick and easy to set and to reset. If you should find that four track liners provide more power than you need, reduce the number to three. Try to keep your costs down by using only as much power as can be used efficiently for throwing the track.

Work from Fixed Properties

I have been talking about projecting a straight line and cautioned you not to aim at a particular intermediate point ahead, but to let each swing in the line work itself out and find its own ending. In most cases this works fine, but there are exceptions. One of these is when you are lining to a bridge that cannot be moved and you must hit the end of the bridge just right. The best way to handle this situation is to start at the end of the bridge and work away from it until you are satisfied that you have done the best you can. The same thing would apply to a switch or any other point in the track that is not to be moved.

Another situation is where you are approaching a curve that has been staked. Your best bet is to go to the first stake and center the track on it, then work back toward the straight track. In this way you have a good straight line for approaching the spiral of the curve.

On long stretches of straight track, it is common practice for civil engineers to save the expense of heavy lining by "breaking tangent." This means that at some point they put a slight swing in the track alignment. Usually they do this at the top of a rise, at a highway crossing, or at the end of a bridge. They do it at these points because they are least noticeable there. Sometimes you can employ this trick to good advantage to save unnecessary lining expense.

Highway Crossings, Bridges, Etc.

If it should be necessary to line through a highway crossing, a switch or over a bridge, be sure the necessary tools are on hand. The quickest way to move a crossing is to dig a trench, the width of a shovel and to the bottom of the ties, along the outside crossing plank. The crossing can then be pried over without removing any of the planks. It might be necessary to use a track jack at each end of the planks to get it moving. At the center of the crossing, lay one lining bar down parallel with the rail and use it as a "heel" on which to pry with the other lining bars. Once you get the crossing loosened, it will handle easily.

If a switch is badly out of line, it will be necessary to pull the spikes on the turnout rails, then line the main track rails, after which the turnout rails are respiked to proper line. If this is not done, the switch will throw out of line under the first train that passes.

When it is necessary to line a bridge, the best procedure is to notify the chief carpenter, who will either have the bridge lined or will furnish supervision to see that the work is done properly. Bridges generally are lined by shifting the deck on the stringers.

When it is contemplated to relay a curve with new rail, the curve should be center staked and put to a good line before the new rail is laid. The reason for this is to maintain proper expansion in the new rail joints.

During a ballasting operation, the track should be put to the line of the center stakes right behind the skeletonizing crew. It requires a minimum of help to throw the track while the cribs are empty, and prevents the possibility of throwing the track off the newly tamped surface which might occur if done after tamping. Someone should be assigned to see that the center stakes are not damaged by the skeletonizing crew. It will be necessary to reline the track behind the surfacing unit because the power jacks will disturb the line to some extent, but this is mostly a matter of smoothing the line and does not involve heavy throws.

Lining by Section Forces

More track is lined by a section foreman and two laborers equipped with two track jacks than is generally realized. If section foremen would learn to put a small notch close to the end of the lifting pawl on the jack, so it would catch the edge of the rail base, they would find that they no longer have to dig jack holes to set the jacks. The jacks would then hold their proper lifting angle and would not slip and endanger the men. If the companies manufacturing these track jacks would add one-half to one inch to the length of the lifting pawl, the jacks would be even more efficient lining tools. In this connection, however, flag protection is provided whenever jacks are set between the rails.

These, then, are the "trade secrets" of the old-time track liners as they were taught to me before the introduction of the modern optical lining instrument. If you will study them carefully, and think your way through them, I am sure they will be of as much benefit to you as they have been to me.

Diesels and Rail Lubricators

By J. W. Diffenderfer
Supervisor of Track
Pennsylvania, Johnstown, Pa.

● Probably the most revolutionary change to affect the entire picture of railroading thus far in this century, and possibly in the entire era of the industry, has been the remarkable advent of dieselization within the short space of less than one decade. Almost overnight, many roads became completely dieselized and others were within a few units of hauling all their traffic with diesel power. The current slack in business has enabled almost all traffic to be handled by diesels.

However, as has happened in other phases of the business, diesels have brought their problems as well as their benefits to maintenance-of-way men. One of these problems has been the increasing amount of rail wear caused by wheel flanges.

Diesels Have Greater Axle Loads

Many diesel locomotives are as heavy or heavier than their steam counterparts, yet axle loads are sometimes much greater because of the fewer number of axles per unit. As shown in Fig. 1, steam power, regardless of size, has a far greater number of axles than the conventional diesels. The loadings of these axles varied, to be sure, yet were seldom as greatly concentrated as they are in the four- and six-wheel trucks of diesel locomotives.

This greater axle load not only makes itself evident in vertical loadings on the roadbed structure, but also increases the lateral thrust of each wheel as it passes around curves and through turnouts. Assuming the lateral forces of diesel and steam units to be equal, the forces transmitted to the rail by the wheels would be much greater per wheel in the diesel unit with the fewer number of wheels. With more flanged wheels through which to distribute the lateral forces, the steam locomotive provides a smaller unit lateral force per wheel to produce rail wear than the diesel does.

Particularly when ascending grades and pulling or pushing heavy loads, diesel units have a tendency to slew. Not only do the trucks slew, but the entire unit operates "crabwise," or at an angle of five or ten degrees from the direction of the train movement. Even at very low speeds, this tendency places an extreme lateral thrust upon the rail head of both tangent and curved track, which never before was evident in steam operation.

The wheels on diesel units are all of smaller diameter compared with those of steam power, and, therefore, as shown in Fig. 2, provide much smaller flange area per wheel bearing against the rail head. With smaller flanged area per wheel through which a greater lateral thrust is transmitted, the diesel is bearing laterally against the rail head with more pressure in pounds per square inch. Of course, these factors apply only to the locomotives themselves and have no bearing upon the rest of the train.

Speed Is Another Factor

It is in the realm of train speeds that diesels have had the greatest effect upon rail head wear. Nor is this speed difference noted only in the highspeed zones, where the speed problem has always been present, and where, with the almost universal use of speedometers that dieselization has effected, the speed problem is probably lessened by closer observance of maximum speed restrictions.

With diesel operation, rail-flange wear has increased many fold in the former slow-speed areas; as on ascending grades, preceding and leaving sharp curves and other reduced-speed zones, and near station stops. The rapid acceleration of diesels in the low-speed ranges has more than doubled the speed of former operations in such areas.

This factor has resulted in considerable curve wear at locations where this condition was relatively slight or previously not encountered. It has demanded a review of existing superelevations and espe-

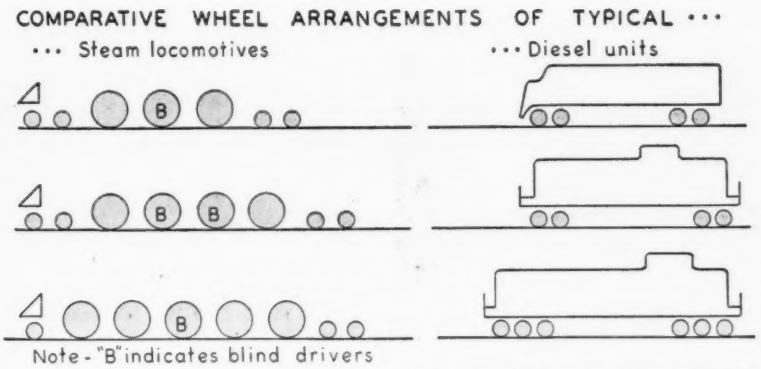


Fig. 1—The minimum number of flanged wheels on a steam locomotive is greater than the number of wheels on the average diesel locomotive unit.

The author says diesels cause more rapid rail wear on curves because . . .

- **Their wheel loads are more concentrated**
- **They apply greater lateral thrust on curves**
- **They operate "crabwise" with the track**
- **The acceleration is more rapid in "slow-speed" zones**

His suggested approach to the problem is to . . .

- **Make effective use of rail lubricators**
- **Apply lubricators according to calculated needs**
- **Time their delivery ahead of rail renewals**
- **See that they are properly serviced and maintained**
- **Give careful attention to selection of lubricant**

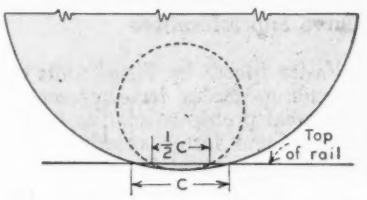


Fig. 2—The lateral thrust of diesel driver (dotted) is more concentrated.

cially of the need for rail lubricators. In many instances rail lubricators have been, and can be, the most overlooked and most neglected machines in maintenance work.

Rail Wear Is Often Rapid

On some main-line curves of from 5 to 8 deg., flange wear was removing up to ½ in per year from the gage side of the outside rail head before rail lubricators were installed. On newly laid rail, which does not have the advantage of years of cold rolling, this wear was as much as ⅜ in. in the first month of use.

Of course, more than curvature, rail conditions and time affect the amount of rail wear. Speed, superelevation, and the annual gross tons handled are also primary factors. All of these produce rail wear which in some instances has worn back the gage side of the rail head well into the web—and then some!

Because of flange wear, rail renewals have been made after only a relatively few years of service on curves of only 3 deg. In some instances, expensive regaging has been the order of the day, and, in other instances, the tedious task of transposing rail is common practice. All of these are material- and labor-consuming practices. None of them provides a remedy for the cause. None helps to lessen the wear or aims toward the maintenance-free goal. They still follow the idea of doing the same old thing in just a different, although sometimes a more efficient way.

If they never realized it before, maintenance men should recognize the need for rail lubricators in this age of dieselization. However, lubricator requirements, if recognized, are often poorly calculated. No one should contemplate rail renewals in a territory having curves traversed at high speeds or of over two degrees without calculating his lubricator requirements and ordering the necessary number of machines for delivery before the scheduled rail-renewal date. As previously mentioned, wear of new rail by wheel flanges can become great in the first few months after the rail has been laid without the benefit of lubrication protection.

Others, although realizing the need for lubricators, often calculate their needs haphazardly. It is not a matter of pinpointing a track chart and deciding to place lubricators every mile. Nor is it a matter of deciding to place a lubricator at each extremely sharp curve and leaving the others somehow to take care of themselves.

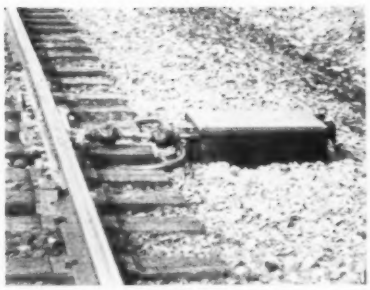
An analysis must be made of each curve in the territory being considered. The right-hand curves should be listed in one column and the left-hand ones in another. For each curve the degree and length must be listed, calculating the degree-feet from the product of the two quantities.

Each manufacturer can provide the approximate degree-feet of proper lubrication that his machine will provide under certain conditions. This approximation is only a starting index for calculating the requirements as it must be varied to suit other conditions, such as a heavy gradient where the feed of the machine must be cut down, or such as a single track where both freight and passenger trains operate. For one type used on our road, the figure of 11,000 degree-feet of lubrication is used for calculating requirements. Actual experience may also provide figures for use in determining the number and location of the machines to be used. No lubricator orders should be placed, however, until a territory has been analyzed, for failure to do so may result in either inadequate lubrication, waste of lubricator machines, or the need to shift machines should more be added in the future. Fig. 3, with the accompanying text, shows briefly the method for analyzing the particular territory indicated.

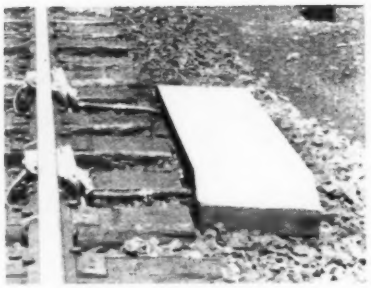
Curves near station stops and near reduced-speed zones should be included in the lubricator calculations because experience has probably proved by this time that the rapid acceleration of diesel locomotives has greatly increased the

Five Types of Lubricators . . .

ALADDIN rail lubricator



MECO type MBJ lubricator



MOORE & STEELE series 1C

rail-head wear by wheel flanges at these locations which formerly were not affected in the days of steam operation.

Curve Superelevations

Faster speeds by diesel units on ascending grades have presented some real problems relative to rail wear. These faster speeds would indicate a demand for greater superelevation on uphill tracks, yet some heavy-tonnage trains, especially those handling mineral freight, continue to ascend these grades at relatively slow speeds. Increased superelevation, especially on heavy grades, can cause a lot of maintenance expense and wasted maintenance effort, as well as spelling "D-A-N-G-E-R" in capitals.

Slow, heavy-tonnage traffic, riding the low rail, will break down the track structure and increase the amount of superelevation almost over a fortnight. Without constant vigilance on the part of the track forces, superelevation and cross-level conditions can readily become sufficiently bad to cause derailments. Yet, unless superelevation is increased, the faster speeds brought on by the diesels will increase the rail wear by wheel flanges tremendously.

Rail lubricators can provide the answer to the increased rail wear being experienced on ascending grades without requiring additional superelevation with its accompanying work and dangers. Unfortunately, they cannot yet be proclaimed as the complete answer to this rail-wear problem.

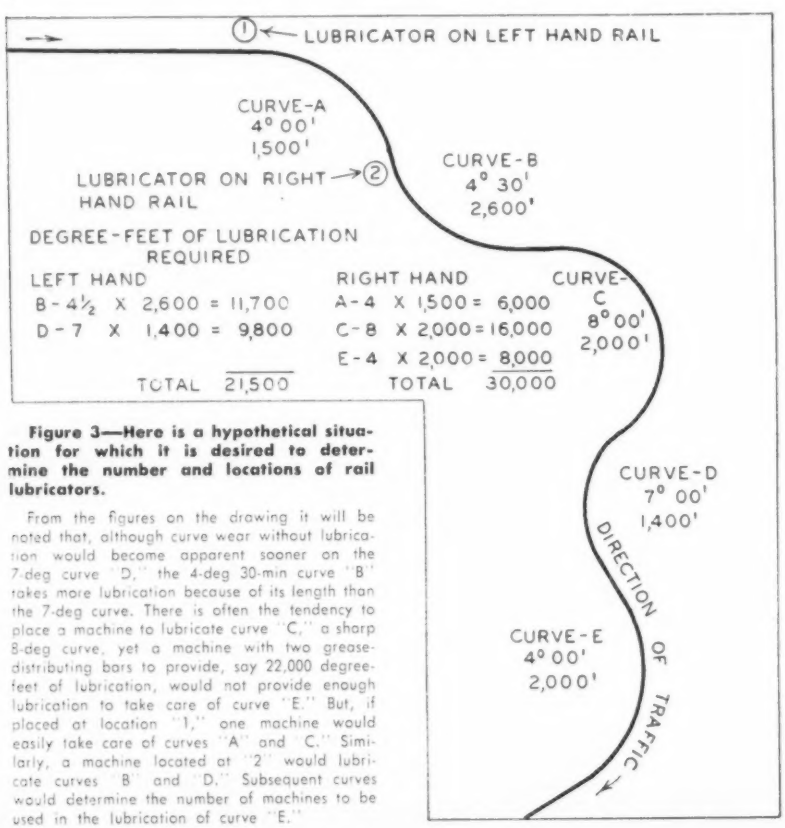


Figure 3—Here is a hypothetical situation for which it is desired to determine the number and locations of rail lubricators.

From the figures on the drawing it will be noted that, although curve wear without lubrication would become apparent sooner on the 7-deg curve "D," the 4-deg 30-min curve "B" takes more lubrication because of its length than the 7-deg curve. There is often the tendency to place a machine to lubricate curve "C," a sharp 8-deg curve, yet a machine with two grease-distributing bars to provide, say 22,000 degree-feet of lubrication, would not provide enough lubrication to take care of curve "E." But, if placed at location "1," one machine would easily take care of curves "A" and "C." Similarly, a machine located at "2" would lubricate curves "B" and "D." Subsequent curves would determine the number of machines to be used in the lubrication of curve "E."

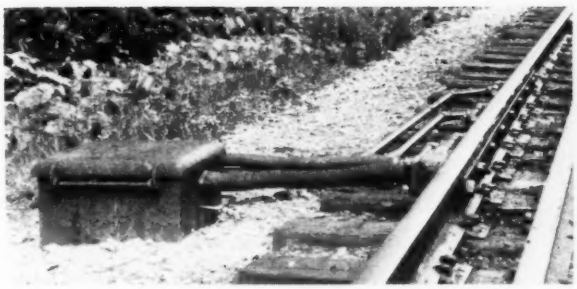
Sanding of Rails

There is still some controversy as to the advisability of placing rail lubricators at locations where there is heavy sanding, such as experienced on heavy ascending grades or where yard switching is done extensively on curves. Some contend that the sand, spilling onto and mixing with the lubricant, will turn the lubricant into an abrasive and aggravate the rail-wear condition where sanding is heavy. On the other hand, many others point to the fact that sand does not cling to the sides of the rails and the only grease that becomes fouled with sand is that small amount which is already extruded and standing on the grease-distributing bars of the machine at the moment that the sanding unit passes over it. There is, however, no question about the economies to be realized by the use of rail lubricators under most circumstances. Even on heavy ascending grades where there is considerable sanding, they have proved their worth in reducing rail wear.

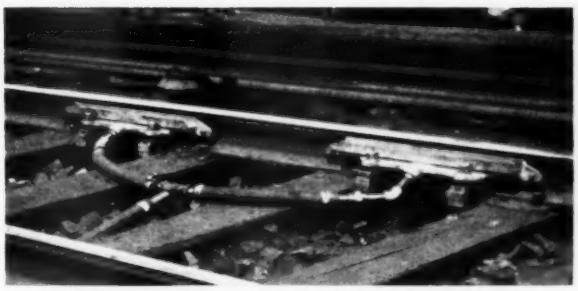
Flange lubricators on locomotives have been used to some extent in yard territories, but there as well as in road service they present problems that should be considered before their use is contemplated. Compared with the rail lubricator, the flange lubricator installed on a locomotive presents a greater maintenance problem, does not lubricate as extensively, and has a greater tendency to mix with the engine sand.

Units Not Always Accessible

Track maintenance men probably wish at times that a good flange lubricator would be developed to eliminate the need for maintaining rail lubricators at almost inaccessible locations. The location of a rail lubricator is sometimes enough to



RACOR rail lubricator—Design No. 4000-A-X



SESMO single-rail installation

discourage proper inspection and maintenance. If, in Fig 3, it is difficult to get to lubricator location "2," experience has proved that it is quite satisfactory to place the lubricator for the right-hand rail at location "1" with the other lubricator. This will not only speed maintenance of the machines but also will encourage closer inspection and better care of them.

Rail lubricators, to be effective, must not only be properly located but also properly installed at the calculated locations. The best service can be obtained with some types by placing them on tangent track where there is no superelevation and where neutral flange thrust prevails. Others perform their best when installed on spirals. Prolonged life of the grease-distributing bars can be gained by milling out the gage side of the rail head about ⅛ in or enough that this lubricant-distributing medium will not receive the constant impact of the wheel flanges but will be protected by this means of housing it. Although installation of these machines does not require skilled labor, men who are experienced and interested in doing this work should be used to make all of the installations within their respective territories.

Regardless of the growing evidence of rail wear by wheel flanges and its accompanying economic wastes, many maintenance men have looked unfavorably upon rail lubricators because of unpleasant experiences gained as a result of having improperly maintained machines. Rail lubricators, though simple, are machines that do need some attention. They cannot be left alone without care for months on end if good results are desired.

Their grease containers must be kept filled with an approved type of lubricant. Once emptied, they cannot provide the protection for which they were installed. In addition, when the grease-distributing assemblies are without lubricant they receive an excessive and needless amount of wear, and the machine pumps air throughout its entire system, which requires some time to be cleared of air before the machine is again restored to operation.

Good Lubricant Is Essential

The selection of a good lubricant is most important, probably as equally important as the machine itself. An idea was once held that any type of old oil or grease would do and that it was economical to use reclaimed oils and greases for this important work. There are graphite lubricants especially designed for use with rail lubricators. Some flow well in the winter but too freely in warm weather, so that they fail to adhere to wheel flanges and provide proper lubrication. In addition, the lower-viscosity lubricants have a greater tendency to splash onto the rail head or waste large amounts by flowing away from the rail and down over the machine.

Careful tests should be made of the lubricant to be used and consideration given to the varying temperatures encountered. However, some lubricator manufacturers conduct their own tests on lubricants and have lists of approved brands that are available to railroad users. Additional protection should be given to the machine and lubricant by keeping the tank covers closed and locked so that foreign matter will not enter system.

In each district, one man should be made responsible for the maintenance of all the lubricators. If the number of machines warrant, this can entail enough work to make it a full-time job and one that will return its cost many times. The machines should be checked at least weekly for ordinary wear, adjustments, supply of lubricant, and possible damage caused by dragging equipment. It has been gratifying to note the interest and pride that the men have taken in the job of maintaining the lubricators. A machine is no better than the care it is given, and the good job that these men have done has been reflected in the excellent lubricator performance obtained.

Seasonal Adjustments Necessary

To keep lubricators from putting a bad taste in the mouths of operating men, it is important that the machines be seasonally adjusted to prevent an excessive amount of lubrication which would place lubricant on the rail head. Parts supply, as with any machine, is important, and the man responsible for maintaining the machine should make certain that a good supply of parts is always available.

The section foremen should also be made lubricator-conscious. They will be if they realize all of the regaging, relaying, and transposing work that proper lubricator performance will eliminate. They are in a position to make sure that the lubricators are always filled with lubricant and that the machines are functioning properly. Good foremen will show a real interest in the lubricators and demand that plenty of care be given them.

After the lubricators have been in service for some time, field surveys should be made to verify the paper calculations and to determine if additional lubricators are needed.

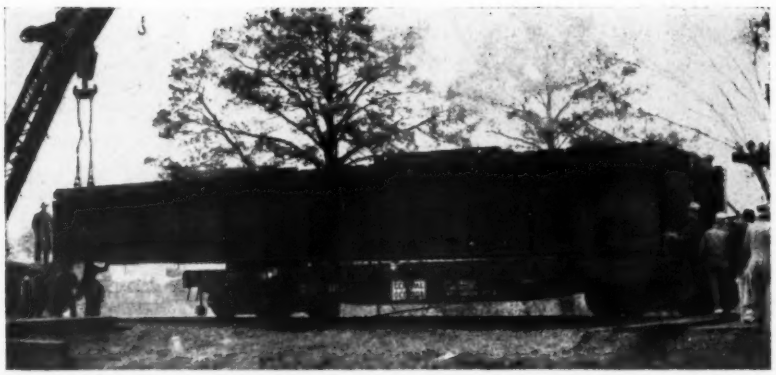
Every maintenance man should review his lubricator needs in the light of changes effected by dieselization, especially by the greatly increased acceleration of trains and the faster speeds on ascending grades. He should take time to calculate his needs, and, properly calculating them, should take the necessary steps to assure the best possible maintenance for the machines that are installed. After all, even if diesels did not cause the increased amount of abraded wear on the gage side of rail heads, the lubricators that are trying to prevent this wear are still no better than the care that is given them.

When Placing Girder Spans . . .

Old Trestle Used

The Central of Georgia recently replaced a 293-ft open-deck pile trestle with two I-beam spans and three deck-plate girder spans near Columbus, Ga. The old trestle was used as falsework for placing the spans which had been prefabricated out of steel salvaged from the retirement of other structures.

By G. W. Benson
Superintendent of Bridges
Central of Georgia, Macon, Ga.



1 GIRDER SPANS complete with deck ties, were prefabricated in the road's Columbus yard. They were loaded on flat cars, transported to the site and unloaded on blocking preparatory to placing operations.

2 SHORTER END spans were fabricated from I-beams. After removing the end portion of the trestle, crews placed the spans with a single wrecker crane.

● When its Bull Creek trestle carrying the main line between Columbus, Ga., and Americus came up for renewal, the Central of Georgia decided to replace the 5-pile open-deck structure with a 5-span steel girder and concrete bridge. In line with the road's experience in conversions of this type, it was decided to use the old trestle as falsework for setting the girder spans.

Work was commenced on the project by driving treated piling three feet inside the dump bents at each end of the trestle to serve as supports for new concrete abutments. Temporary untreated piling were also driven on either side of the points where the new concrete piers and abutments were to be placed. Temporary spans—I-beams over the piers and stringers over the abutments—were then erected on the temporary pile bents to serve as supports for the deck during construction of the concrete work.

Preparation Work

After the piers and abutments had been poured and allowed a sufficient curing period, the temporary spans over them were removed and temporary frame bents were installed on the tops of the new piers and abutments, so located that anchor bolt holes for the shorter spans and shoes for the longest span could be placed. The track was then raised to the desired new grade, lined, and the running rails relaid with secondhand rail so that joints were located over each pier.

All of the spans were prefabricated in the road's Columbus yard. They consist of an I-beam span at each end of the bridge and deck-plate girder spans between the intermediate piers. Their lengths, beginning at the Columbus end, are 26 ft, 57 ft, 67 ft, 103 ft and 33 ft, respectively. All of the steel used, with the exception of the masonry plates for the deck-plate girders and plates and lateral systems for the I-beams, was salvaged from an abandoned mine spur and from the reconstruction of an underpass. After the steel work had been assembled, cleaned and painted,

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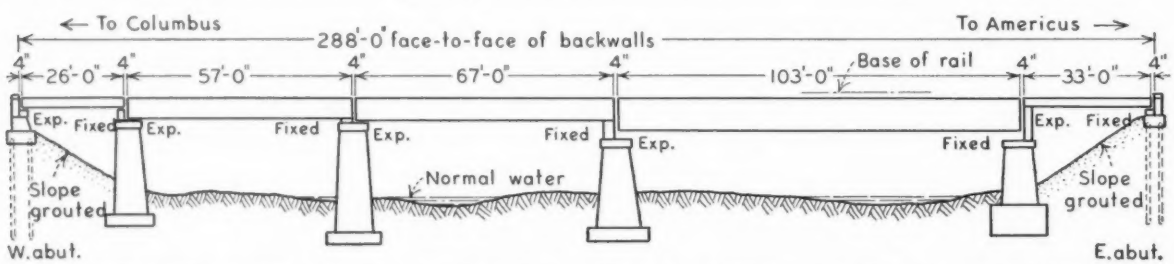
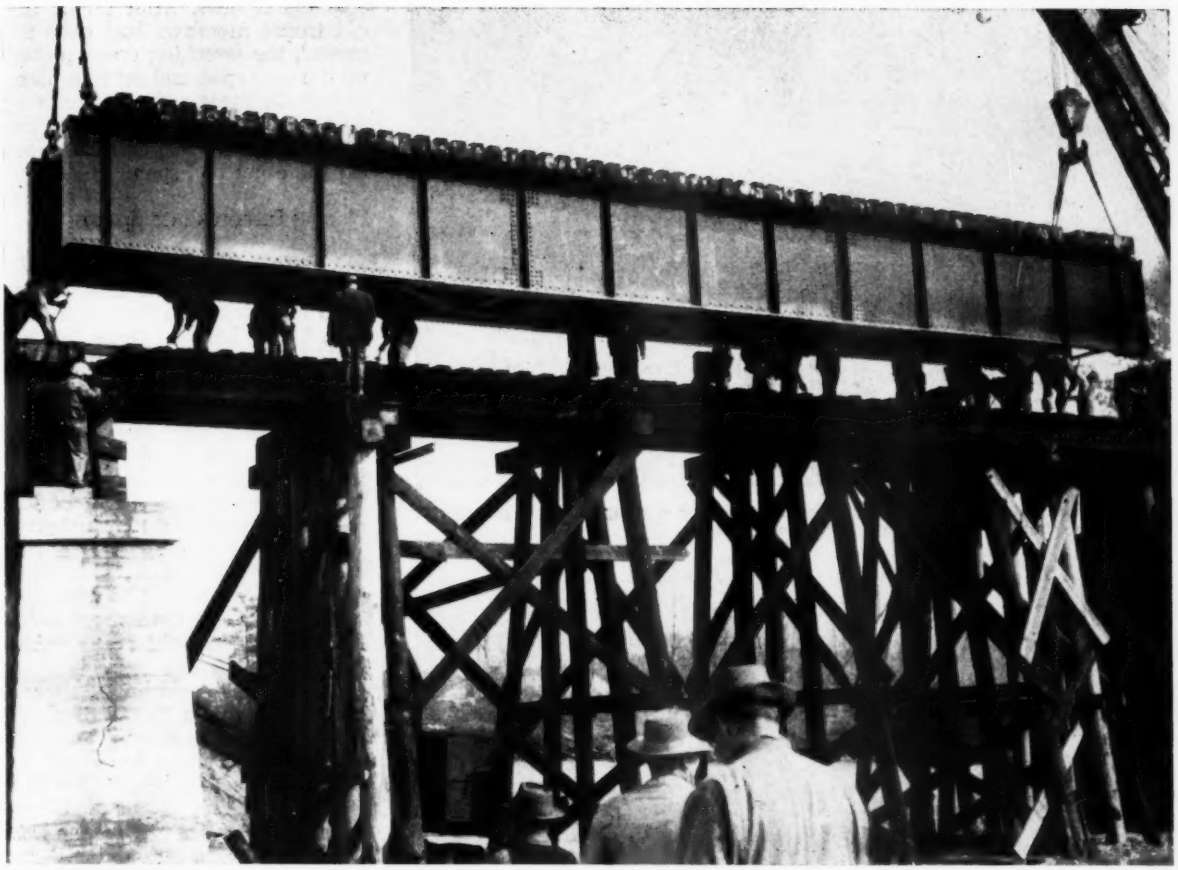


ORIGINAL trestle was 293 ft long, but new structure was shortened to facilitate construction of concrete abutments.



3 INTERMEDIATE spans were handled by a crane on each end, which held the span suspended over the piers while the trestle between them was removed.

as Falsework

5 POWER SAWS were employed to cut down the pile bents, after which, the span was lowered into place on its concrete piers. Time consumed in placing the spans ranged from one hour for the shortest to four for the longest.

4 CRAWLER crane, working from streambed below, was used to remove ties and stringers.

RUNNING RAILS were relaid immediately after placing a span to allow passage of trains and so that work could continue on the next span.

INNER METAL guard rails were installed after the last span had been placed, and the end slopes were covered with slag and grouted to complete the project.

bridge forces countersunk holes in deck ties and attached them, together with spacer blocks, to the new girders. The 26-ft and 33-ft spans were then loaded onto single flat cars and the 57-ft and 67-ft spans were each placed on a single car with an idler car at one end. The 103-ft girder span was loaded on a car with an idler car at each end. All of the cars were then moved to an industry siding near the bridge site.

The shorter end spans were unloaded on blocking at the Americus end of the bridge with a wrecking crane. Preparatory to installing the first of these spans bridge and track forces dismantled all of the old trestle between the abutment and the first intermediate pier. A crawler-mounted diesel crane, working from the streambed, removed the ties and stringers as they were taken loose. The old bents were cut down using air and gasoline-powered chain saws. After all of the old trestle members had been removed, the wrecking crane picked up the new span and set it in place on the abutment and pier. Running rails were then replaced and the same procedure was used for placing the other end span.

Placing Intermediate Spans

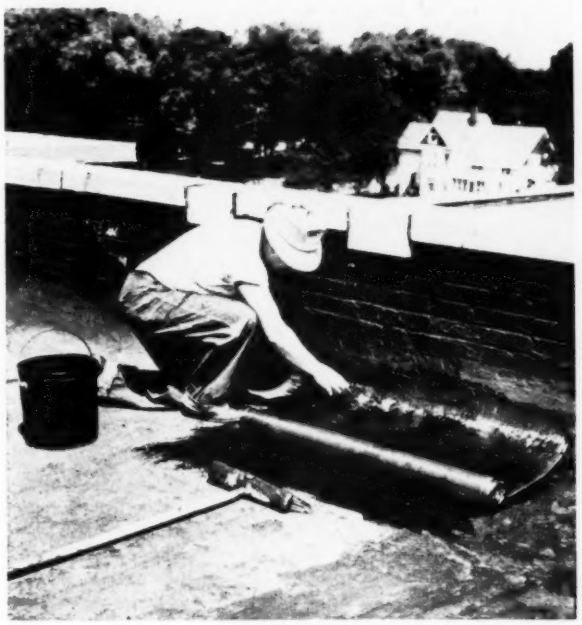
A different method was used in handling the intermediate spans, since two wrecker cranes were required to handle these longer girders. The spans were unloaded on blocking at the Americus end of the bridge and, with a crane on each end, they were picked up and moved out onto the bridge to the desired location. While the cranes held the span suspended about 3 ft above the track, the rails between the piers were removed and shoved back under the cranes. Then track and bridge forces went to work dismantling the deck of the trestle. The crawler-mounted crane working from below was again used to remove all of the old bridge timber and pile it up in the streambed. Power saws were used, as in the case of the end spans, to cut off the old pile bents. After the trestle had been completely dismantled between the piers, the girder span was lowered in place and the rail replaced on the span so that work could be started on the next span to be set in place.

After all spans had been placed, anchor bolts for the shorter spans were grouted in place in the piers, and shoes were riveted to the 103-ft span. The running rail was relaid and inner metal guardrails were installed. To complete the job, slag was unloaded in the gaps left by the shorter length of the new bridge and on the slope between the end abutments and the first intermediate piers and covered with a mortar grout to prevent erosion of the embankment.

All of the reconstruction work was done with company forces using company equipment. The spans were set between trains with only one minor delay to a regular train. Time consumed in placing the individual spans varied from one hour for each of the I-beams to four hours for the 103-ft span. The work of placing the spans was completed in three days.

The project was carried out under the general direction of H. G. Carter, chief engineer, and G. A. Belden, assistant chief engineer in charge of bridges and buildings. The author had direct supervision over the project.

Steps in Applying Membrane . . .



END OF ROLL is spot-stuck at the starting point with a bitumen coating, after which . . .

COATING MATERIAL is applied on top of the open-mesh membrane as it is unrolled; then the . . .

For New or Repair Jobs . . .

Glass-Fabric Roofing

● Considerable savings in labor and material costs as well as long life are said to be the results of a new technique in the application of "roll-type" roofing. The new process, developed by the Twinsburg-Miller Corporation, uses Glasfab roofing membrane and a bitumen coating.

Glasfab, which was introduced about seven years ago as a waterproofing membrane, is an inorganic fabric woven entirely of glass fibres. According to the manufacturer, it will not char, burn, rot, become brittle, wear or tear.

An outstanding feature of the new process is that the bitumen coating material is applied on top of the reinforcing membrane instead of underneath. The open-mesh weave of Glasfab permits the coating to penetrate through the mesh, surround the glass fibres and bond with the under-surface.

Steps in the application of this single-ply roofing are as follows: (1) At the starting point a small amount of the coating material is spread out to serve as a spot-sticking for the end of the Glasfab roll; (2) the end of the roll is embedded in the coating and an additional application of bitumen is spread over the end to assure good setting; (3) the fibre-glass roll is unrolled and an initial coating of bitumen spread over it with a squeegee; (4) a finish coating of bitumen is applied in quantities specified by the coating manufacturer.

The manufacturer claims that a single-ply application of Glasfab and an approved roof coating will provide water-tight protection for a minimum of 10 years without recoating. The use of 45-in by 300-ft rolls of Glasfab is recommended, however rolls in widths of 36 in or smaller are available, if required. The 45-in roll weighs 17 lb and covers 11½ squares. Tools required for application of the material include a rubber squeegee, soft push broom and a roofing knife.

In addition to its use as a new roofing, Glasfab may be used to make repairs to existing roofing material. It is stated that the new process is excellent for the repair of roof blisters, cracks, open joints, and flashing breaks.

JOB IS COMPLETED by spreading the bitumen over the membrane, using a squeegee and push broom.

MOVING SIDEWALK (left) was recently installed by the Hudson & Manhattan at Jersey City, N. J., to carry passengers from its sub-level station to the ground level station of the Erie, a distance of 227 ft. The conveyor consists of a continuous rubber belt operating over steel pulleys (below) and is powered by a 20 hp electric motor.

News Briefs in Pictures . . .

RIGHT—The Caterpillar Tractor Company has constructed a new plant at York, Pa., to improve parts service to its eastern and export customers. The plant comprises approximately 770,000 sq ft under roof. Parts storage and shipping operations are housed in the 500 ft by 600 ft building shown at the right. Fork-lift trucks are used to transport material around the building.

BELOW—Over 50 lengths of "Ribbon-rail," welded by the Oxweld process, rest alongside the main line of the Richmond, Fredericksburg & Potomac near Richmond, Va. The road is now engaged in laying this jointless rail, replacing regular 39-ft joined rails.

WHAT'S THE ANSWER?...

. . . a forum on track, bridge, building and water service problems

Protection of New Rail

Should new rail be protected by a slow order? Explain. If so, how long should the slow order remain in effect? Why?

Protect New Rail

By T. J. Barcio
Roadmaster,
Chicago & North Western,
Norfolk, Neb.

New rail should be protected by slow order for several reasons. First, to hold track gage and line until the rail is firmly set. This reduces the expense of regaging the track at some later date. Second, to give the mill scale a chance to wear off gradually and thereby avoid pitted rail. Third, to prevent the rail from creeping if the rail anchors have not been installed.

A slow order will also help set the tie plates which may otherwise shift on slack ties under the action of fast trains.

The slow order should usually remain in effect for at least 48 hrs, depending on the amount of traffic. On lines where traffic is heavy the speed may be increased somewhat after 24 hrs.

Conditions Govern

By Herbert J. Crannan, Jr.
Foreman (Track),
New York City Transit Authority,
New York

"New rail" is not sufficient reason, per se, to establish a slow order, but this dogmatic statement must be qualified. New rail is often installed in a track immediately preceding an extensive, and perhaps badly needed, tie-renewal and surface raise. In such cases the rail renewal will tend to disturb and further weaken ties which are in poor condition. Moreover, track out of line and surface may cause permanent damage to the new rail under ordinary traffic. Safety, economy and riding comfort being thus affected—a slow order becomes imperative.

Much such new rail has merely been "made safe" and must be permanently secured before the track is returned to normal operation. While such work is in progress every effort must be made to discover and correct any track deficiencies at once.

New rails which form part of new construction and new rail laid out-of-face on dead track should be subjected to a temporary slow order after being opened to traffic. This is necessary for there has been no opportunity to observe the effects of traffic over this work, either on the rail or on the traffic itself. This slow order should last no longer than it takes to determine the ability of the track to safely carry the required traffic.

Some railroads in the United States are using a gage ⅛ in tight on high-speed tangent track to reduce nosing and rail wear. In such cases it seems proper and desirable to make correspondingly fine adjustments. Therefore, on such construction a slow order may be proper for safety. How long this order should remain in effect I cannot say, but the length of time that the order remains in effect will vary directly with the amount of traffic and wheel loads.

The accomplishment of effective work safely and without undue interruption of train service is the most challenging problem indigenous to track maintenance. We as maintenance men must meet this challenge—not avoid it. Often in the case of requests for slow orders management shows a naive trust in the judgment of maintenance officials by granting them almost automatically. It behooves maintenance men not to take advantage of this faith. In these days when transportation and competition are nearly synonymous terms, even a branch as important as maintenance of way must take a long, unselfish view and not be pampered to the detriment of the health.

Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the October Issue

1. What effect, if any, has the introduction of diesel locomotives had on the maintenance of line and gage on curves? Is it more or less difficult? Explain.

2. To what extent should roller applicators be used by paint crews? What are the advantages of these rollers? The limitations? Explain.

3. Should the bolts in switch rods be placed head up or head down? How important are the cotter keys in these bolts? Explain.

4. What is the most effective method of repairing stone box culverts where the cap stones have failed? Explain.

5. When rail is renewed on track having irregular gage, should the first line of new rail be gaged to the old rail? Why? If not, how should the new rail be gaged?

6. What are the most effective methods of controlling surge pressures in fuel-oil pipe lines? Explain.

Good Work Minimizes

By John L. McMillan
Track Supervisor,
Gulf Mobile & Ohio,
Springfield, Ill.

The protection of new rail by slow order (usually 20 miles per hour) is a sound policy. Rail laying is done at a sacrifice to train service and where a main is surrendered it naturally follows the rail must be laid as rapidly as possible. A slow order provides protection while details of the work are completed. The number of days a slow order is required depends on factors rising from the condition of track prior to rail laying and the methods which were employed in laying the rail.

Where new rail replaces old rail of the same weight on existing tie plates, a little adjusting of the surface and line usually makes it possible to advance the slow order with each day's laying. Where new rail of greater height is laid the problem of out-of-level track on tangents and an increase or decrease of curve elevation and run-offs must be considered. Full plating usually goes along with heavier rail, sometimes at locations where track was only partially plated before. This poses the problem of swinging ties.

The methods employed in laying rail vary with equipment and personnel and these may be good or poor. The best of modern equipment manned by well-trained men minimizes the number of details to be completed or corrected in the wake of the rail gang and provides the most satisfactory guarantees of short-term slow orders.

Raising Open-Deck Bridges

When out-of-face surfacing requires the raising of open-deck bridges to fit the new grade, should the bridge be raised before or after the track raise is completed? Why?

Raise Bridges When Surfacing

By H. M. Harlow
Assistant General Supervisor,
Bridges & Buildings,
Chesapeake & Ohio, Richmond, Va.

If the track raise is 4 in or under, the bridge should be raised before the surfacing operation, constructing run-offs in the track approaches as required for the speed of traffic. This will give track forces the grade toward which to work and permit the bridge men to raise the structure on permanent shoes, plates or blocks.

If the raise is more than 4 in, then the bridge can best be raised at the time the track is surfaced. Bridge shoes should be ready and the necessary labor and equipment scheduled for the job. While the surfacing force has the track, the bridge can be raised with a minimum loss of time from traffic. If the raise exceeds 4 in and is made prior to surfacing, the run-off in the track will be more expensive.

If everything, including the bridge force, material and equipment are readily available, the raising of the bridge at the time of surfacing is most desirable, regardless of the amount of the raise. Then any chance of misunderstanding as to the amount of raise, and which force will do what job, is materially reduced and better work results. Run-offs at the bridge are also eliminated and better riding conditions will result if all the work is done at the time of surfacing.

Simultaneous Raises Preferred

By Joseph A. Jorlett
Assistant Engineer,
Bridges & Buildings,
Pennsylvania, New York, N. Y.

Any out-of-face surfacing of track requires that the work of raising track on clean ballast proceeds completely and continuously over a given stretch of track, as distinguished from work at disconnected points only. It is most likely, today, that a large track gang with power equipment will be used for this surfacing work. The raise in the track may vary from a part of an inch up to many inches.

One of the elements of out-of-face surfacing is the study of the track profile and the design of a new grade. The new grade will include the use of proper vertical curves at transition points. If the raise is two inches or more stakes should be set to the established grade for the guidance of the track forces.

In main-line, high-speed territory, if the work is done under traffic, there are many reasons for raising the bridges as the track is being raised. One is that of economy. If the track is raised first, a run-off at each end of the bridge would be required. This run-off will vary from ½ in. in 31 ft for speeds in excess of 70 mph to ¾ in. in 31 ft for 50 to 70 mph territory. Therefore, for a 3-in raise in a territory where speeds are 70 mph or more, a run-off equal to 180 ft would be required.

If the bridge is raised after the surfacing is done, part of the track gang will have to return with their tools and equipment to do the work. This back-tracking slows the work of the larger gang. If the bridge is over a waterway, it will usually be at the bottom of a sag, and unsatisfactory riding conditions may result if run-offs exist.

In well-maintained territory with good ballast the elevation of the rail on the bridge and on the approaches will be at proper grade when the bridge is raised to its designed elevation. Where maintenance is below standard and ballast or subsoil conditions behind the bridge abutments may not provide satisfactory track tie support, the bridge-repair men may "cheat" some. They may make the bridge raise "stiff" hoping to delay the time of the next raise, or they may make it "slack" so that the inevitable complaints about the track being down at the end of the bridge will be less frequent.

If bridge raises are not made simultaneously with those of the track there seems little advantage in making them either before or after the track raise.

Raise Bridges First

By H. G. Carter
Chief Engineer,
Central of Georgia,
Savannah, Ga.

When it is practical to do so, the bridge or trestle should be raised as the surfacing approaches the structure. This will eliminate the necessity of running slow orders at the same location to cover two different operations.

When it is not practical to raise the bridge in conjunction with the

out-of-face surfacing, the bridge should be raised before the track raise is completed. This will insure a track surface in the same plane as the established bridge surface. It will give the roadbed and ballast time to pack tightly under traffic at the bridge ends, where the run-off is pulled, and where it is most difficult to maintain good riding conditions due to the fact that the train wheels are passing from a more or less flexible roadbed structure to the rigid structure of the bridge.

This procedure will save some time for the surfacing gang, as the tamping of the run-off can be done in one operation, and any labor saving with these gangs is essential to economical operation.

Because of these factors we have found it advisable to raise bridges ahead of the out-of-face surfacing gangs.

Establish Bridge Grade

By William B. MacKenzie
Bridge Engineer,
St. Louis-San Francisco,
Springfield, Mo.

It has been our policy, when out-of-face surfacing requires the raising of open-deck bridges to fit the new grade, to raise the bridge first and provide suitable run-offs on both sides to fit this grade temporarily. In this way standard 3-in, 4-in, 6-in, or 8-in material can be used for raising the bridge, and the track can then be brought up to fit the grade later. If track is brought up first, and the bridge is left in a hole, bad riding conditions will result and bridge raises will invariably require non-standard material.

In some cases bridge gangs and district gangs work together. At these times bridge raising and track surfacing are done at the same time, always remembering that the raise is to be in even inches to fit the material on hand. It is the roadmaster's responsibility to see that no out-of-face surfacing is done on his territory unless bridges are also raised.

In some cases overhead bridges will have to be raised to maintain minimum overhead clearances. All out-of-face surfacing under highway overheads, therefore, requires special handling.

Pipe Lines Serving Car-Washers

What effective methods may be used to prevent corrosion of the pipe lines serving automatic car-washing facilities? Explain.

Use Corrosion-Resistant Pipe

By Bridge and Building Supervisor

The use of highly corrosive detergents for the removal of the stubborn oil and dust films which accumulate on passenger equipment, when in service, has posed a rather complicated problem in connection with the handling of these fluids. This is particularly true in connection with the transfer of these compounds from the mixing vat to the automatic car-washer. Even the use of corrosion inhibiting compounds in these detergents has not completely eliminated the trouble, but serves only to abate it.

Ordinary steel pipe is especially susceptible to the action of these chemicals. This is possibly due to the movement of the compound in the pipe. This movement evidently reduces the effective action of the inhibitor. Pipes of this type which are buried in the ground and also subject to electrolytic action have an extremely short life.

Several methods of dealing with these troubles are available. To eliminate damage by electrolysis from outside sources, the exterior of the pipe should be coated with an asphaltic paint or, better yet, wrapped with such protective coatings as Tapecoat. They may also be enclosed in cast iron or vitrified pipe carrier lines of greater diameter than the service pipe itself. These carrier lines will effectively protect the exterior of the pipe and permit it to be pulled at such times as it needs renewal. This type of construction, when one considers all the extras, will be found to be expensive.

The least expensive construction in the long run will be copper pipe. Such an installation may have a slightly higher first coat; this however is more than offset by relatively trouble-free service. It goes without saying that only corrosion resistant valves of bronze should be used throughout the installation.

There are on the market several brands of trademarked pipe that are reported to be coated with corrosion resistant films which will resist the action of either acid or corrosive substances. We have had no experience with these pipes and therefore are not in a position to recommend them.

Reconditioning Scale Parts

To what extent is it economical to recondition scale parts in railroad shops? Explain.

Rework in Company Shops

By R. A. Hostetter
General Superintendent,
M/W Equipment and Scales,
Texas & New Orleans, Houston, Tex.

In my opinion the economy of railroad scale repairs should be checked in several spheres.

The first would concern the difference between contract prices secured from outside shops and the actual net cost of repairs and reconditioning in railroad shops. The price differential would vary with the different types of scales. For instance, a modern heavy-duty track scale would cost at least 50 per cent more to repair outside, while repairs to small warehouse scales may run from 25 per cent to 75 per cent more.

The next phase, from the economical standpoint, is the absolute control of materials and workmanship available in railroad shops. This, in my opinion is of the utmost importance. When conditioning scale parts in railroad shops the best of materials can be used, including the correct grade of tool steel for pivots and bearings and decay-resistant woods for timber parts. This is economical because it increases the service life of the scale and saves removal and ship-

ping expense. When scale repairs are made in railroad shops better workmanship is secured than is obtainable in shops operating for profit.

The next consideration would be control and timing of repairs. When railroads recondition and repair their own scales, work can be planned and performed seasonally. This is a saving to the operating department, as work around a scale can be expensive when it is needed and not available. This cost would not be visible but it would be important when the scale is out of service in a busy location.

We have found from past experience that scales and parts reconditioned in our shops have a much longer service life than those reconditioned in contract shops. The initial cost of outside repairs is conservatively 50 per cent greater, to which freight and drayage charges must be added.

On roads without their own scale-repair facilities, small scales are for the most part replaced and the old scales scrapped. This can prove expensive as an identical replacement scale may not be procurable and it may also be necessary to revamp the foundation. This would, of course, apply to built-in scales only.

Should Ties Be Spiked After Tamping?

When ties are renewed in connection with out-of-face surfacing operations, what advantages, if any, would result from spiking the new ties after the track is tamped? Explain.

Spike Ties First

By James R. Carden, Sr.
Track Foreman,
Southern Pacific, Hazen, Neb.

In my opinion ties installed ahead of an out-of-face surfacing gang should be spiked in advance of the tamping. The spikes will then hold the tie plate in its proper position and insure a snug fit between the plate and the base of rail.

Where a production-type tamper is used and tie renewals are not heavy, a small gang should renew the necessary ties well in advance of the raise and the tamper. If these ties are not spiked, they will not come up when the track is raised. It will then be necessary to spot the tie and the plate at the tamper. The vibration of the tamper will often cause the plate to shift. When this happens the shoulder of the tie plate may catch under the rail base and leave the tie slack after the plate has been adjusted.

Spike When Placed

By M. L. Frederick
Division Roadmaster,
Northern Pacific, Spokane, Wash.

Assuming that out-of-face surfacing operations include raising the entire track an inch or more, all tie renewals should be made either in advance of the raise or immediately following it. All insertions should be made in advance of tampers and new ties should be fully spiked when installed. This will avoid any back tracking or delay to tamping operations. Leaving ties unspiked until the track is tamped would not have any advantage because and on account of the following:

1. Tamping of loose ties is unsatisfactory and results in needless delay caused by the clearing of ballast from ties and from under tie plates and readjustment of plates which foul prebored spike holes.
2. The ties would have to be respaced and straightened before being spiked.
3. The surface and line of track already tamped would be disturbed. This may result in uneven compaction under old and new ties.

Sand and Dirt Drifts

At locations where sand or fine dirt drifts onto railroad track, what methods are best adapted for its removal? Explain.

Long Standing Problem

By L. P. Drew
Assistant Chief Engineer,
Union Pacific, Omaha, Neb.

This problem has plagued all division engineers, roadmasters, supervisors and maintenance engineers for many years. Once ballast has become fouled by mud, sand, cinders or other finely divided material there appears only one answer: Completely remove and replace it. If the cost of new ballast is exorbitant or prohibitive, the old ballast can be cleaned with modern ballast-cleaning equipment. The problem of selecting the best method depends largely upon local conditions and economics.

Preventive measures are often more economical than repairs or replacement. As an illustration, sand fences have served very well to prevent drifting sand. Ditching has often prevented water from carrying mud into and fouling ballast.

Preventive Measures Effective

By H. M. Tremaine
District Engineer (Retired),
Northern Pacific, Spokane, Wash.

The action described is the one commonly referred to as "sand blows." This does not include materials entering the cut prism from the weathering or decay of the cut slopes. The material here discussed is that deposited on the roadbed by the force of "air-in-motion."

The methods of removing this fine wind-blown material are

largely determined by the contour of the ground, the nature of the air action and the extent of the obstruction formed. These methods with one possible exception are mechanical.

At locations where the material has drifted onto the track from blow sources below the subgrade level, action should be taken at the onset of the movement and continued through the active period. Such action includes hand-shovel handling, planned to keep the material in motion and the top of rail uncovered. Off-track dozers will at times greatly assist this hand effort.

There are times when it may be difficult or impossible to coordinate effort to prevent blocking of traffic. In such cases all available mechanical equipment (preferably off-track) and labor forces must be used to open up the line.

The most effective plans for control of these conditions are those based on the preventive approach. Preventive measures include establishment of sand fences on either or both sides of the track, the spraying of oil, the spreading of stockyard manure, or the planting of vegetation to control the formation of sand blows.

"An Ounce of Prevention"

By Ira W. Toy
Roadmaster, Soo Line, Drake, N. D.

We find that there is nothing that can compete with the Jordan spreader in removing sand or fine dirt from the track centers and as far out as the shoulder or ditch. Of course even with the spreader properly set there is still some hand-shovel work necessary to clean the cribs and the ballast between the ties and track centers. If possible, it is my policy to live up to the old saying that "an ounce of prevention is worth a pound of cure." Drifting sand and dirt act practically the same as snow. Therefore, in these regions where such conditions exist, we treat them in the same way by installing a low snow fence or a small ridge of earth graded to act as such. All cuts in these areas should also be back-sloped at about five to one leaving a ditch that is a good 8 ft. in width at the bottom. Usually once a season one should clean the ditches and remove drifts from behind the fences. This will prevent most if not all of the dirt and sand from reaching the track. There is no equipment that can compete with off-track machines for removing drifting sand from behind the snow fences or from ditches and disposing of it along the grade in some nearby low spot.

Economy Dictates

By George S. Crites
Division Engineer (Retired),
Baltimore & Ohio, Baltimore, Md.

Economic considerations will decide what measures are the best for taking care of sand and fine dirt drifts on railroad tracks. Preventive measures are justified for important lines, whereas it is a waste of time and energy to spend much money for the protection of lean lines where revenues have been sapped by highway and air competition.

Drifting sand and loess are prevalent on flat windswept areas and these deposits usually follow a regular pattern. Where such conditions are established and where climate and soil conditions are good for vegetation, slopes of cuts and fills should be sodded and shrubbery or trees should be scientifically planted for windbreaks. If the lines so protected have a long life expectancy, trees which would grow into crosstie timber might be economical for windbreaks.

With such protection, track areas should be sprayed with heavy oil to allow winds to sweep dust from them. The ballast sections should provide at least two inches of space under the rails to prevent dust and dirt from accumulating against the rails, and the cribs should be left slightly open to prevent air currents, caused by passing trains, from sucking dust and dirt into locomotives and cars.

In desert and sandy areas where vegetation of any size or consequence will not grow, the slopes of cuts and fills, as well as the roadbed, should be kept coated with heavy oil and scant ballast sections should be maintained to allow sand and dust to be swept off and away from track areas by prevailing winds. In some places in these areas, sand fences may be necessary. Even with such devices in place, it may also be found economical to keep slopes and roadbed coated with heavy oil.

On light traffic lines, it is expedient to take care of drifting sands and loess as it occurs. Whereas, a scant ballast section is the most economical for such lines, it is best to forget the ballast section and use a snow plow or a spreader and shaper to clear drifts from the tracks in the same way snow drifts are removed. It may be economical to install sand fences or temporary barricades where drifts may be bad, but usually plows or spreaders and shapers are more dependable and economical.

Where unusual deposits may occur, as in the so called "dust bowl," off-track equipment has proven economical.

Mechanize Handling

By J. R. Rushmer
Roadway Engineer,
Atchison, Topeka & Santa Fe,
Amarillo, Tex.

Fine sand and/or soil are deposited on the track, especially during dry weather, by the action of wind which carries each particle of material separately. The material is deposited in the voids in ballast, in all apertures in track fastenings, and between the base of rail and the top of the crib ballast. Sometimes windborne material builds up very fast, and covers the track from a few inches to several feet in depth before removal equipment can be put to work. In such cases watchmen must be kept at the site to protect trains, and section gangs brought out to control the situation with hand tools.

Where these drifts are extensive, ballast plows, Jordan spreaders, Fairmont ballast drainage cars and other similar equipment, fitted with center and side plows, are most economical for removal of the bulk of the material. When bull dozers and angle dozers, road graders, and similar power tools are available they have been found to be very economical and fast in handling material above top of rail. Ditchers, crawlers-shovels and draglines may also be used especially in cuts. Sometimes it is necessary to load material in air-dump cars in cuts and haul it out for dumping on fills. Hand tools are required to clean out between base of rail and top of ballast.

In ballasted track, after a few dust or sandstorms, the ballast is fouled to the extent that shoulder ballast must be cleaned. Frequently in such cases the track should be skeletonized and surfaced because drainage has been completely plugged. In case a rainy period follows the duststorms, the above measures become imperative if good riding is to be maintained.

What's the Answer? (Cont'd)

Favors Dike Protection

By L. A. Loggins
Chief Engineer,
Texas & New Orleans, Houston, Tex.

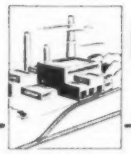
There are several locations on the T&NO where sand drifts on and near the track make it necessary to use hand labor, bulldozers, draglines and Jordan ditchers for their removal.

Sand fences, scrap tie fences, hedges and dikes are used to keep sand from drifting onto the track. Old type sand fences have been discontinued on the T&NO; sand fences, built of scrap ties, and dikes are now relied upon. Hedges are satisfactory, but there are usually no watering facilities to assist their growth at locations where such protection is needed. We therefore resort to the use of dikes which are usually constructed just inside and along the right-of-way fence. These dikes are located 50 ft from the center line of track, and the material is obtained from excavation between the track and the dike.

This type of protection prevents sand being blown onto the track area. We have found that these dikes, if built to the proper height, will deflect air currents during heavy storms, and that the wind will carry large amounts of sand up and over the track area to the other side of the track. To make this plan successful, all small dunes or knolls must be leveled to prevent the deflection of air currents.

In sand areas there is excessive tie-plate cutting resulting from fine sand getting between the tie plates and the ties. We are now using some tie pads, liquid asphalt and other asphalt preparations between the tie plates and the adzed portions of the ties to reduce this cutting action.

Where sand infiltrates the ballast to the extent that some of the ties are humped, and riding conditions are unsatisfactory, it is necessary to make a running surface to improve riding conditions.



PRODUCTS OF MANUFACTURERS . . .

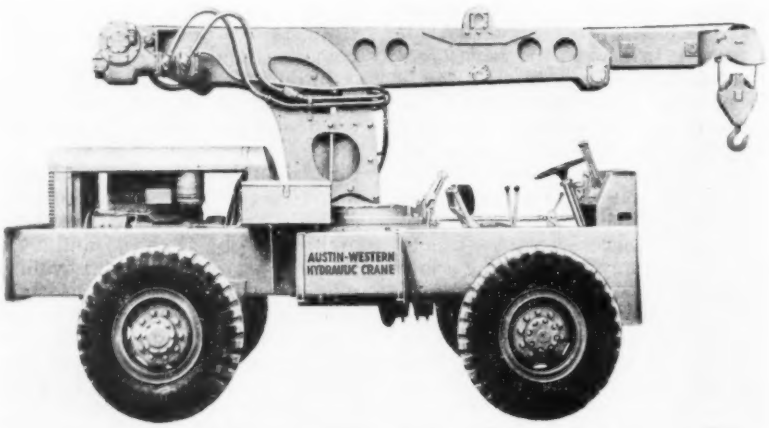
. . . new, improved equipment, materials, devices

WINDROW AND STOCKPILE LOADER

A NEW LOADER, designated the Model 7-11 Force-Feed Loader, and designed for windrow and stockpile loading, has been announced by the Athey Products Corporation, Chicago. This new loader supersedes Atheys' Model 3 Force-Feed Loader and is of the self-feeding, self-propelled, conveyor type.

The Model 7-11 can be fitted with two types of mold board-feeder arrangements that can meet most job requirements. One feeder arrangement includes augers which work with a bulldozer-type moldboard that can load from either a stockpile or windrow with a 90 in width of gather. The other feeder arrangement includes two tapered, grader-type moldboards angling out from the front to provide an 84-in width of gather for heavy-duty windrow work.

Mechanical improvements to the new model include a new heavy-duty industrial engine, a Ford "215" 6-cylinder 101-hp unit; heavy-duty, two-speed, vacuum-shift rear axle; and 12:00 by 24 traction tires. In addition, the new loader now has a loading speed ranging from .26 mph to 1.74 mph and a traveling speed up to 20 mph. A simplified hydraulic control system has also been added.



HYDRAULIC CRANE

FOR BOTH INDOOR and outdoor lifting jobs the Austin-Western Company, Aurora, Ill., has introduced a new self-propelled, hydraulic crane. It is an adaptation of a crane originally designed for the navy and features four operating

(*Continued on page* 62)

FROM THE CHIEF ENGINEER OF A LARGE SYSTEM . . .

Recently the Chief Engineer of a major road sent the following written message to the Engineer of Maintenance:

"I HAVE JUST COMPLETED INSPECTION OF TRACK INCLUDING AREAS TREATED WITH BRUSH AND WEED KILLING PRODUCTS IN 1953 BY READE. AS YOU RECALL, ON BRANCH LINES 'X' AND 'Y', WE HAD EXCEPTIONALLY HEAVY GROWTH. CARRY OVER BENEFITS ARE THE BEST THAT I HAVE EVER OBSERVED. THIS APPLIES TO BOTH BRUSH AND WEED KILLER."

This favorable report is a source of pride and satisfaction to us. It is typical of the type of work that we are duplicating for many railroads—the best of results at the lowest possible cost. Such commendable performance is possible because—

- We have an exceptionally capable, elastic organization that includes not only chemists but *agronomists*—men who make the study of plant life their profession.
- We maintain a research staff over the full calendar year.
- We school our service men to use chemical with a conscience—spare no effort to conserve chemical, to assure economy.
- Our equipment for distributing chemical is improved each year as our experience in the field suggests changes.

Perhaps we can be of service to you in similar work.

READE EST 1885

READE MANUFACTURING COMPANY, INC.

JERSEY CITY 2, N. J.

WORKS: JERSEY CITY • CHICAGO • KANSAS CITY • MINNEAPOLIS • BIRMINGHAM • STOCKTON

functions. These are: turntable rotation, boom elevation, raising and lowering of cable and hook, and power extension and retraction of the boom.

The lightweight, rubber-tired unit has been designed for use around warehouses and yards where versatility and speed are important. It features a 360-deg boom rotation and a 24-ft horizontal reach from the center of rotation. Vertical lift height is 24-ft from the ground level to the hook. The manufacturer states that the machine is able to negotiate grades up to 20 per cent under full load and will travel at 15 mph fully loaded. The crane's overall dimensions are 9 ft in height and 8 ft in width, which are said to meet door and aisle requirements in most cases.

The company is now engaged in designing a series of attachments including clamshells, magnets, fork lifts, loaders, bulldozers and snow plows for the new crane. A truck-mounted application of the unit is also being developed for marketing in the near future.

"FOUR-IN-ONE" TRACTOR ATTACHMENT

A PIECE of machinery said to be capable of handling a multiplicity of earth-moving jobs has been provided by the new Drott "Four-In-One" hydraulically controlled attachment for International Harvester's TD-6 crawler tractors. The new unit, available through International Industrial Power distributors, can be converted into a bullclam shovel, a bulldozer, a front-end loader or a clamshell by placing a shovel-selector lever in the desired position. The lever is located within easy reach of the operator, and shovel selection can be made when the tractor is in motion or standing still.

As a bullclam shovel, the attachment can be used for sanitary landfill operations and to transport dirt on short hauls. With the clam open, the shovel becomes a bulldozer. Depth of cut is regulated by the forward and backward pitch of the blade rather than by the lifting and lowering of push beams as on conventional bulldozers and front-end shovels.

In the front-end loader position, the "Four-In-One" has the same roll back at ground level as a standard Drott front-end loader. The bottom dump feature of the unit in this position gives it a clearance in excess of 14 ft above the ground.

For picking up stockpiled or other loose material in confined operating areas, the operator can place the shovel-selector in the clamshell position. When loading and transporting, the bucket may be rolled back and semi-skidded on the ground.

In addition to the four shovel features, the unit may also be used as a backhoe. Overall width of the attachment is 68 in and height is 40 in. Shovel capacity is ⅜ cu yd with a lifting capacity of 3,000 lb, and break-out force is 8,500 lb. Overall weight of the "Four-In-One" and the International TD-6 crawler tractor is less than 9,000 lb. The attachment is manufactured by the Drott Manufacturing Company, Milwaukee, Wis.

IMPROVED TIE REMOVER

AN IMPROVEMENT to the Simplex Tie Remover No. 80A which permits attaching of hooks under the rail, instead of on top, thereby permitting a more direct push, has been announced by Templeton, Kenly & Co., Broadview, Ill., manufacturers of the device.

No. 80A is essentially a ratchet-lever, jacking mechanism with a long, toothed rack bar which pushes the tie from under the rail. Length of travel of the rack bar is 86 in, and this improved model is designed so that the rack bar will remain in a horizontal position instead of tending to rise. The device

(*Continued on page* 64)

"... Very Satisfactory ... A Nice Saving"

Roy H. Gilkey, Division Engineer of Central of Georgia Railway Company, is a past President of the Roadmasters' and Maintenance of Way Association of America.

Form 204

CENTRAL OF GEORGIA RAILWAY COMPANY

Savannah, Georgia-m
March 4, 1954
Lubricators

Mr. H. T. Armstrong, Manager,
Railroad Sales,
H. T. Kennedy Company, Inc.,
37 Wall Street,
New York 5, New York.

Dear Holly:-

We installed the Aladdin Rail and Wheel Flange Lubricator at Millen, Georgia, during April 1953. This lubricator was installed on a busy lead and has proved very satisfactory, carrying grease each way through switch points and over frogs.

One of the fine features is that no wheels make contact with any part of the lubricator. This lubricator can be installed very easily by one man, and will fit all types of rail. Another good feature is that the grease is carried along the side of the rail head and not deposited on the top of the rail. It has shown a nice saving on the wear of switch points and frogs.

Care must be taken to see that the correct grease is used, and that the lubricator is kept clean and in adjustment at all times.

Sincerely yours,
R H Gilkey.
Roy H. Gilkey,
Division Engineer.

The Central of Georgia Railway Company is still another important railroad now using the

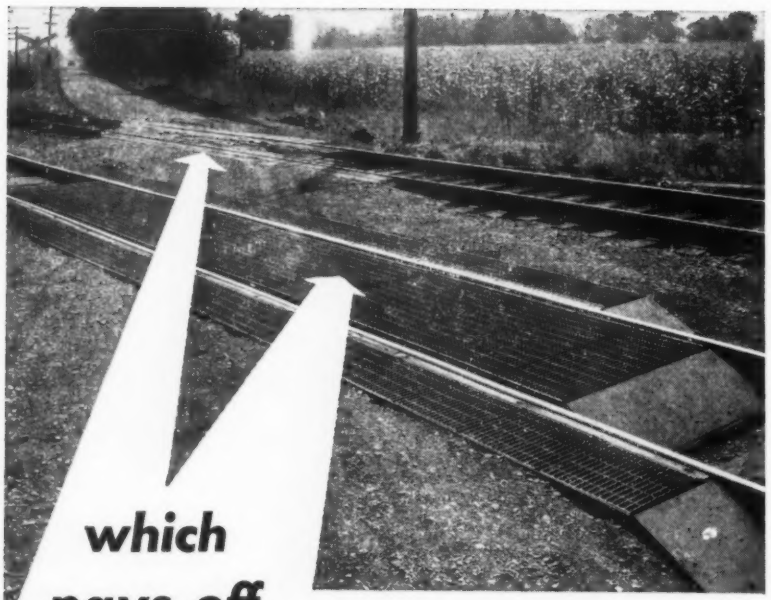
ALADDIN LUBRICATOR

Experienced railroad men value its economy, convenience and simplicity.

The ALADDIN Lubricator is a self-contained valveless *grease* pump. It fits any rail — cuts maintenance on curves, frogs and switches.

Order an ALADDIN Lubricator for *your* road. Try it. Test it and you will join the increasing number of railroads adopting the ALADDIN as standard equipment. Only $178.00 delivered.

H. T. KENNEDY COMPANY, INC., 37 Wall St., New York 5, N.Y.

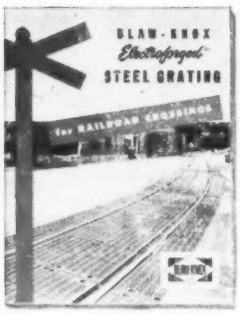


which pays off

Grating by BLAW-KNOX

in less track maintenance and more public goodwill?

You can readily judge which pays off—when you compare the beaten up, old-fashioned wood crossing with the smooth, modern steel crossing, which will last as long or longer than the rails.



To get more complete information, write for your copy of new Bulletin No. 2448 . . . or send your dimensional sketches for a quotation.

GRATING APPLICATIONS
crossings • walkways • running boards • steps • tower platforms • fan guards • shelving • floors • catwalks • stair treads • and many other uses for versatile steel grating

CROSSINGS OF BLAW-KNOX ELECTROFORGED® STEEL GRATING

—are easily installed and maintained—takes only two men to remove sections for tamping tracks, cleaning ballast, renewing ties

—provide good drainage, permit quick evaporation of snow and water, are easily kept clean

—stand wear and tear of vehicle traffic

—provide quiet, smooth crossing for trains

Blaw-Knox Railway Equipment
Distributor—East of Rocky Mountains
Railroad & Industrial Products Company
Chicago, Illinois
H. S. Russell—R. S. Russell
Distributor—West of Rocky Mountains
Brodhead Steel Products Company
San Francisco, California
Local Representatives
The Milliken Company, Roanoke, Virginia
Robert J. Wylie Company, St. Paul, Minnesota
T. F. Carlin, North Chevy Chase, Maryland
J. M. Moore, Denver, Colorado

BLAW-KNOX

BLAW-KNOX COMPANY
2015 Farmers Bank Building, Pittsburgh 22, Pa.

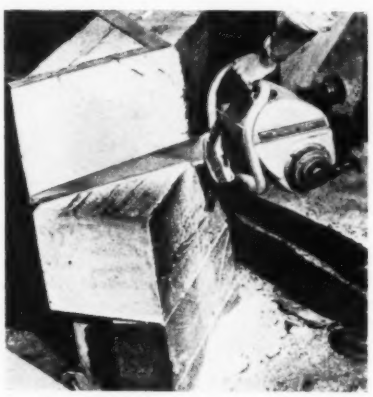
BLAW-KNOX EQUIPMENT DIVISION
RAILWAY EQUIPMENT DEPARTMENT

New Products (Cont'd)

is equipped with a roller at the end of the rack bar for easy movement along the top of rails. The manufacturer claims that the tie remover is considerably faster than pick and tong methods.

GASOLINE-POWERED RECIPROCATING SAW

A LIGHTWEIGHT, 18-in., gasoline-engine-powered reciprocating saw, which is said to eliminate kicking and grabbing, has been announced by the Wright Power Saw & Tool Corp., Stratford, Conn. The new saw, which cuts a kerf of only $^{3}/_{16}$ in., was developed employing the reciprocating principle of the Wright Precision (pneumatic) Power Saw, and weighs less than 25 lb. The fully guarded saw blade is directly connected to the twin-cylinder, single-firing engine which is equipped with an exclusive float-



type, wick-feed carburetor permitting operation of the saw in all positions, including upside down. Fuel capacity is 1½ qt and speeds up to 160 strokes per second may be attained. The saw, which can be used for crosscutting, ripping, felling, trimming and notching—leaving a mill surface on the wood—is equipped with a trigger-type throttle featuring an automatic shut-off safety provision. Should the operator stumble or fall and drop the saw, the engine immediately stops due to the fact that the ignition system grounds as the trigger is released. Blade sharpening can be done by hand in a few minutes. Teeth require no resetting. Total time required for blade changing is only 30 sec, and the entire saw may be disassembled and assembled without the use of special tools.

the modern railway crane

Bucyrus-Erie 250 TON full diesel-electric

With Ward Leonard Variable-Voltage Control

Combining the advantages of diesel power with the flexibility of electric drive, this first full diesel-electric railway crane represents a long step forward in the design of such equipment.

With diesel power there is no waiting for steam, no danger of running out of steam on heavy lifts. The fuel supply problem is simplified. Electric drive eliminates reversing mechanism, permits use of Ward Leonard variable-voltage control.

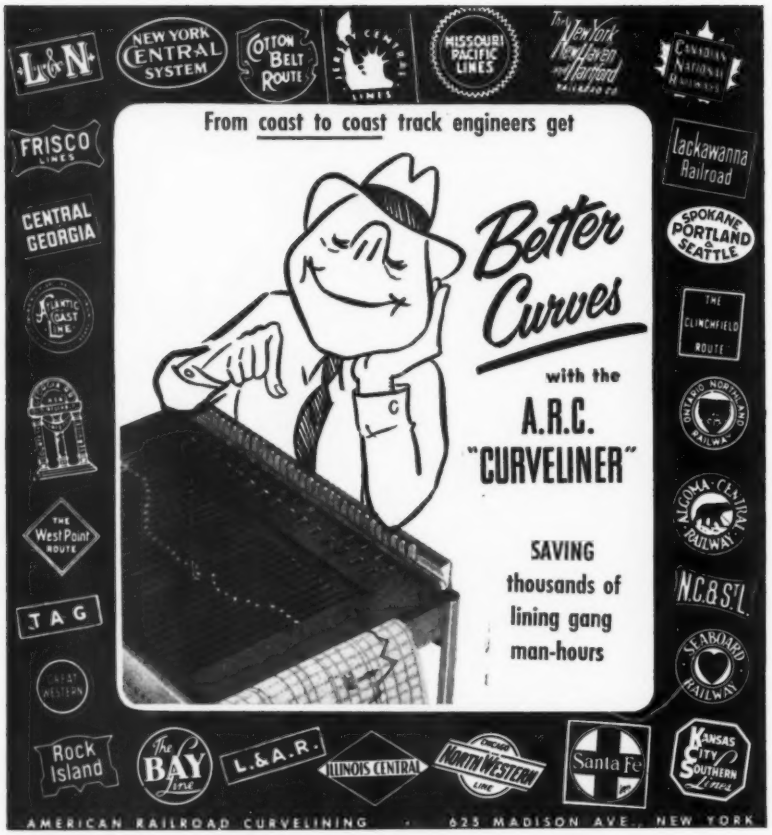
This modern electrical control provides flexibility, accuracy, smoothness, plus fast response through quick acceleration and deceleration of the drive motor. A load is easily inched up or down, or is held in any position by simply moving the control lever to neutral, setting the motor brakes. This control not only improves performance, but reduces electric and mechanical maintenance.

Complete details on all of the outstanding features of this modern crane are given in a new bulletin. A copy will be sent to you on request.

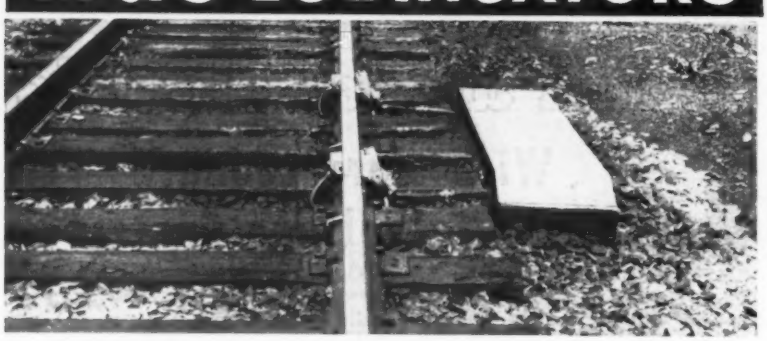
4L54

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN



M & S LUBRICATORS



For Efficient — Economical Rail and Flange Lubrication

The M & S Rail and Flange Lubricator offers advantages found in no other lubricator—the result of 22 years' experience in rail lubrication. Combines simplicity of design with rugged construction insuring economical year in—year out rail lubrication.
Maintenance, other than filling the tank with oil, is rarely necessary. The efficient design with automatic lubrication of the two moving parts in each plunger block, results in long trouble-free service life. Easy installation—no rail drilling—no tie spacing. *Note these down-to-earth prices:* Unit as shown above—$298.00. Single plunger unit—$166.50. Write for complete details.

MOORE & STEELE CORPORATION
OWEGO, TIOGA COUNTY, N. Y.

THE MONTH'S NEWS
Railway Personnel

Engineering

W. E. Manning, chief engineer for the Atlantic & Danville, has been appointed chief engineer of the Tennessee Central at Nashville, Tenn., succeeding **H. R. Manby,** who has retired.

P. F. Giesking has been appointed master mechanic and chief engineer for the Midland Continental at Jamestown, N.D. The position of supervisor-maintenance of way and structures has been abolished.

Daniel L. Jerman, has been appointed assistant chief engineer of the Pittsburgh & West Virginia at Pittsburgh, Pa. Mr. Jerman is an engineering graduate of Lehigh University, and prior to joining the P&WV had been employed as a structural engineer by the Bechtel Corporation.

F. B. Stafford, Jr., instrumentman on the Chesapeake & Ohio at Ashland, Ky., has been appointed assistant cost engineer at Richmond, Va., replacing **K. K. Butler,** whose promotion to assistant supervisor track is noted elsewhere in these columns.

J. E. Dakin has been appointed senior assistant division engineer for the Southern Pacific at Sparks, Nev., succeeding **C. L. Nelson,** who has been transferred to Ogden, Utah, replacing **H. J. Willard,** who has been transferred to Sacramento, Calif.

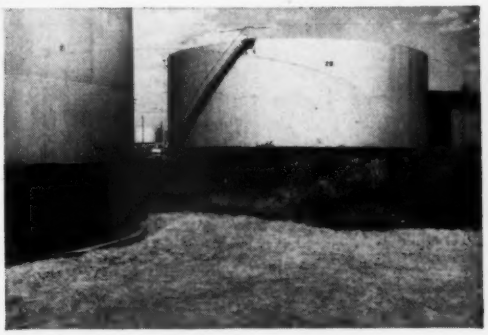
S. H. Fredericks, Jr., whose appointment as assistant division engineer of the New York Central, was announced recently (RT&S, May, p. 70), was born at Lock Haven, Pa., on November 10, 1912. He attended Yale University where he received a B.S. degree in 1935 and a Certificate in Transportation in 1936. After completing his education he joined the New Haven as assistant passenger car distributor where he served until January, 1940. Later that same year he joined the New York Central electric division as a rodman where he served until April, 1941, when he obtained a leave of absence to join the U. S. Navy. He was on active naval duty until January, 1946, after which he returned to the Pennsylvania division of the New York Central as a rodman. In 1948 he was appointed assistant supervisor of track at Lyons, N. Y., where he served until becoming assistant engineer in the office of the engineer of track at New York City in January, 1952.

G. R. Shay, senior structural engineer for the Frisco at Springfield, Mo., has been named assistant bridge engineer-office at Springfield. Mr. Shay was born October 8, 1918, at Bement, Ill. He received a B.S. degree in civil engineering

(*Continued on page* 68)

1. "Telvar" W has extra-long residual action. Track on right was treated in April; photograph was taken in August. Ideal for sidings, around loading docks, etc.

2. Note the thorough weed control under and around this security fence and power substation.



3. Fire hazards are reduced around oil storages and pipelines from thorough, long-term weed control with "Telvar" W.

Kill weeds with Du Pont "Telvar" W *Weed Killer* —long residual action lasts all season

HERE'S a new, low-cost way to solve your weed control problems. Just one application of "Telvar" W can get rid of unwanted vegetation for a full growing season or longer. This powerful weed killer works through the roots . . . and remains in the ground to prevent regrowth. "Telvar" W keeps storage and working areas clear, neat and accessible . . . kills vegetation that may cause a fire hazard or a cover for vermin.

SAVES MONEY, TIME AND WORK . . . One spray usually does the job . . . repeat applications are seldom necessary. No bulky chemicals to handle or store. Just 1 to 1½ pounds per 1000 square feet (40 to 60 pounds per acre) will do the job.

EASY TO USE . . . "Telvar" W is a wettable powder, ready to mix with water; can be applied by machine equipment or ordinary knapsack sprayer. It doesn't corrode metals, is non-flammable, has unusually low toxicity and it is non-volatile.

IF YOU DON'T HAVE EQUIPMENT to apply "Telvar" W, a custom sprayer will do the job for you. In fact, you may want to take advantage of his year-round service.

DU PONT TELVAR W
REG. U.S. PAT. OFF. TRADE-MARK

weed killer for low-cost weed control

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

On all chemicals always follow directions for application. Where warning or caution statements on the use of the product are given, read them carefully.

MAIL THIS COUPON FOR FREE BOOKLET

E. I. du Pont de Nemours & Co. (Inc.)
Grasselli Chemicals Department, Rm. 4026
Wilmington, Delaware

☐ Please send me your booklet describing low-cost weed control with "Telvar" W. ☐ Send me the name of my nearest supplier. ☐ Give me the name of a near-by custom sprayer.

Name_____

Firm_____

Position_____

Address_____

City_____

Railway Personnel (cont'd)

from the University of Illinois in 1941, and, following his graduation, joined the American Bridge Company as a detailer at Gary, Ind. He later served in the same capacity for the Mississippi Valley Structural Steel Company at Decatur, Ill. He joined the Frisco in September, 1943 as a draftsman at Springfield, and, following military service with the U. S. Air Force from 1944 through 1946, he rejoined the Frisco as a draftsman in the bridge department. In October 1947 he was appointed associate structural engineer and later served as structural engineer until being appointed senior structural engineer in February, 1952.

J. W. Higgins, valuation engineer for the Santa Fe at Amarillo, Tex., has been named valuation engineer system at Chicago, succeeding **Frank B. Baldwin**, who has retired, **G. W. Correll** has been appointed valuation engineer at Amarillo, succeeding Mr. Higgins.

Mr. Higgins was born February 17, 1892, at Naples, Tex., and attended the University of Texas civil engineering school. He began his railroad service in 1914 with the Houston & Texas Central, and joined the Santa Fe in August, 1916. He served as draftsman, assistant engineer and valuation engineer all at Amarillo, prior to his recent promotion.

Mr. Baldwin was born at Ellisville, Ill., May 27, 1884, and received a B.S. degree in civil engineering from the University of Illinois in 1905. He began his railroad service with the Santa Fe as a masonry inspector in 1907 and subsequently served as rodman, until being appointed assistant engineer in January, 1910. Later he left railroad service to become assistant engineer for the Missouri Valley Bridge & Iron Works, at Leavenworth, Kan. In June 1910 he was named assistant engineer for the Illinois Highway Commission at Springfield, Ill. He returned to the Santa Fe as a draftsman in September 1911, and served in that position until being appointed assistant engineer in August 1915. From January 1930 to December 1942 he served as engineer of inventories, valuation department, at Chicago. In January 1943 he was appointed valuation engineer system at Chicago. Mr. Baldwin is a past chairman of the Western Group Engineering Committee, and a past chairman of Committee 11—Records and Accounts of the AREA. He was a member and past general chairman of the General Committee of the Valuation Division of the AAR.

Frank B. Baldwin

C. A. Christensen, who has been appointed division engineer for the Burlington at Denver, Colo. (RT&S, May, p. 72), was born at Denver, Colo., August 4, 1915, and attended the University of Denver. While pursuing his college

(*Continued on page* 70)

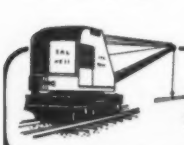
C. A. Christensen

A Burro Crane, its operator and two men on the rail will set a fast pace for the track gang to follow. Rail gangs equipped with a Burro Crane produce more work per shift at lower cost because Burros have the pace-setting speed and efficiency that helps them keep on schedule. Equally efficient with tongs, magnet, hook, bucket or dragline, Burro Cranes handle any job in stride. Fast travel speeds get them to the job in a hurry . . . heavy draw bar pull permits hauling work train and gang.

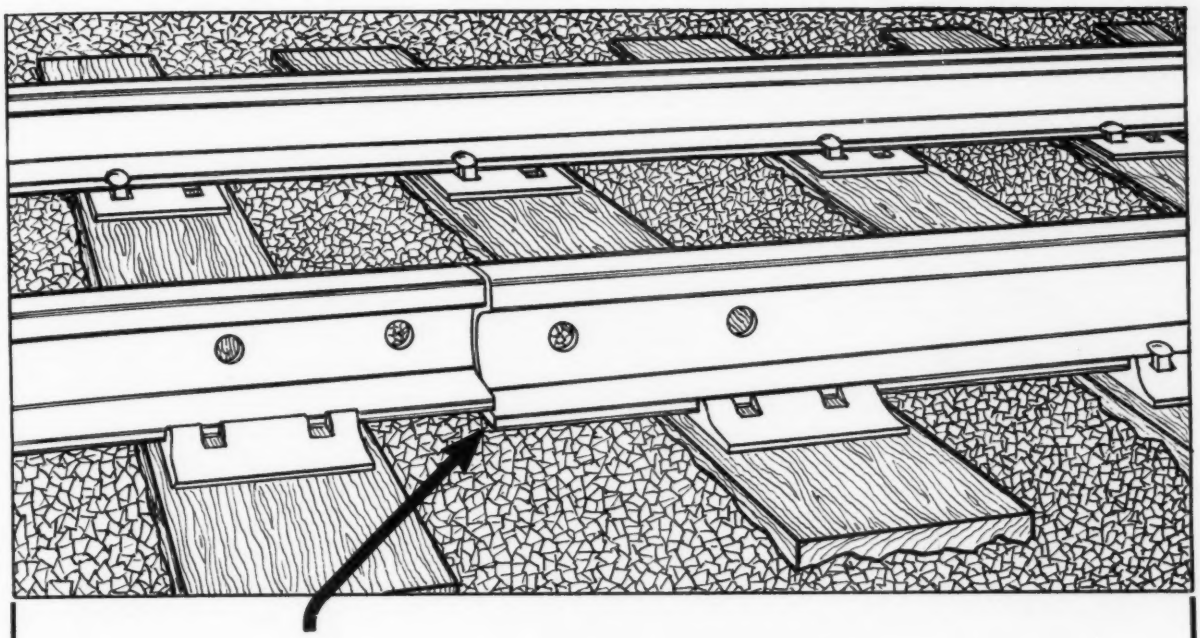
Only Burro Cranes Have:

- Fast travel speeds . . . up to 22 MPH
- Draw Bar Pull of 7500 lbs. often eliminates need for work train or locomotive
- Elevated Boom Heels for working over high sided gondolas
- Short tail swing — will not foul adjoining track
- Low overall height — a Burro can be worked and loaded on a standard flat car

Write for Bulletins on Burro Cranes

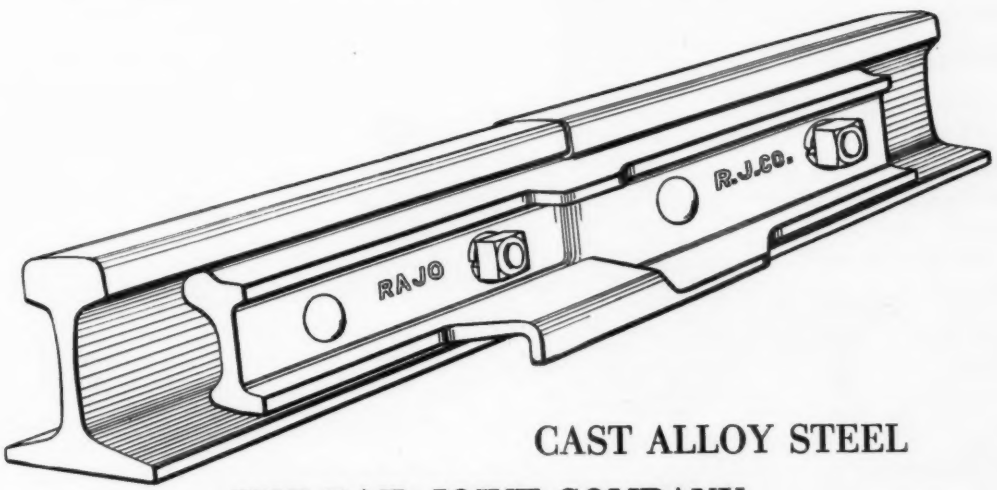


CULLEN-FRIESTEDT CO.
1320 SOUTH KILBOURN AVENUE • CHICAGO 23, ILLINOIS



— A Critical Part of Track —

FOR THE BEST FIT,
RAIL ALIGNMENT AND SUPPORT
— Use —
RAJO COMPROMISE JOINT



CAST ALLOY STEEL

THE RAIL JOINT COMPANY,
50 CHURCH ST., NEW YORK 7, N. Y.

Railway Personnel (cont'd)

studies between 1934 and 1938 he worked part time as a rodman for the Burlington, and in August 1938 joined the road on a permanent basis at Denver. In 1941 he was promoted to instrumentman and served in this capacity until he was appointed acting division engineer at Denver in 1947, the position he was holding at the time of his recent promotion.

W. H. Hudson, Jr.

W. H. Hudson, Jr., chief engineer of the Cotton Belt, has been named to the newly created position of assistant general manager at Tyler, Tex. **J. M. Lowry,** assistant chief engineer, succeeds Mr. Hudson as chief engineer at Tyler.

Mr. Hudson began work with the Cotton Belt in 1922 during the summer vacations from Washington University. Upon graduation as a civil engineer, he worked in the office of the division engineer at Pine Bluff, Ark., and later in the offices of the chief engineer at Tyler, Tex., and as valuation engineer at St. Louis. In 1945 he was promoted to assistant division engineer at Pine Bluff, and three years later he became assistant chief engineer at Tyler.

J. M. Lowry

Mr. Lowry, a graduate of Texas Technological College at Lubbock, Tex., has 14 years of railroad engineering experience. He was with the Texas State Highway Department for two years, and during World War II spent two years in the U. S. Navy, emerging from service with the rank of lieutenant (j.g.) in 1946.

Randle H. Egbert, whose promotion to chief engineer of the Toledo, Peoria & Western at Peoria, Ill., was announced recently (RT&S, June, p. 66) was born in St. Louis, Mo., August 17, 1917. He attended the Missouri School of Mines at Rolla, Mo., from 1937 through 1941, at which time he joined the Wabash at Montpelier, Ohio, as third assistant engineer. In November 1943 he was named first assistant engineer for the Ann Arbor at Owosso, Mich. In February 1948 he left railroad service to join the firm of Sverdrup & Parcel, consulting engineers at Chicago, as a designer draftsman. He joined the Toledo, Peoria & Western as an assistant engineer in October 1948, and later served as an inspector on a government change-of-line project until being made assistant chief engineer in July, 1949. He was appointed engineer-maintenance on January 1 of this year.

Randle H. Egbert

Robert J. Dunn, who has been appointed engineer-maintenance for the Toledo, Peoria & Western (RT&S, June, p. 66) at Peoria, Ill., was born at Bloomingdale, Tenn., June 16, 1913. He began

(*Continued on page* 72)

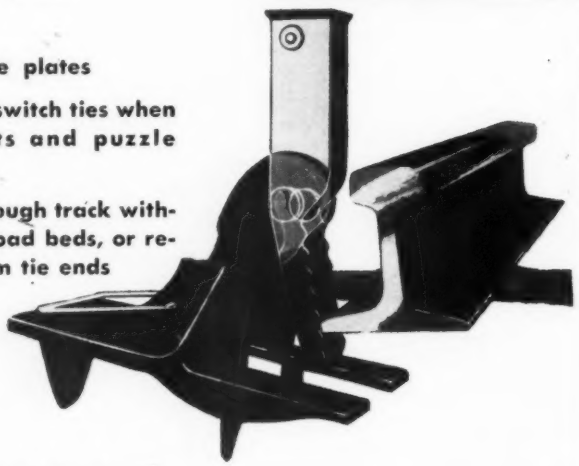
Robert J. Dunn

URECO
TRACKLINER

- For lining track
- For spacing ties
- For raising low joints
- For surfacing
- For replacing tie plates
- For use against switch ties when lining turnouts and puzzle switches
- For smoothing rough track without disturbing road beds, or removing dirt from tie ends

Send for Facts and Prices

MORE POWER
LOWER COST
BETTER TRACK!



This rugged track tool cuts time and labor costs. Simple, foolproof construction. Base: steel casting with heavy prongs to prevent slippage under pressure. Fulcrum: steel casting, easily removed, permits base to be left in track without danger to traffic. Handle for easy lifting or carrying.

No quantity too large or too small

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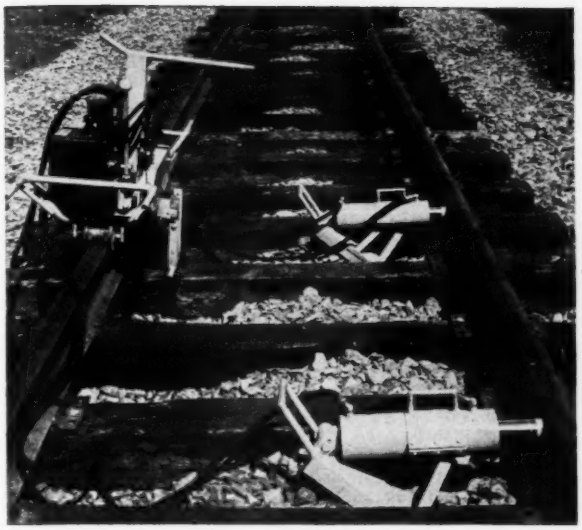


R.T.W. HYDRAULIC TRACK LINER MODEL P-O

The Model P-O Hydraulic Track Lining Unit consists of two Hydraulic Rams and a portable power plant, which is mounted on two double flanged rollers, supported by a hinged bracket support to stabilize machine on the rail.

Hydraulic Pump is driven by a Six Horsepower Air Cooled Gasoline Engine.

When lining freshly raised track, one ram is sufficient. When lining thru switches, road crossings or heavy curves, it may be necessary to use both rams. This will depend entirely upon existing conditions, or the judgement of the foreman in charge of the job.

The machines in service are operated with five laborers and one foreman; one man at machine, one man on each ram and two men digging out the cribs to set the ram.

SPECIFICATIONS

Length 54″	**Width 24″**
Height 30″	**Weight 275 lbs.**

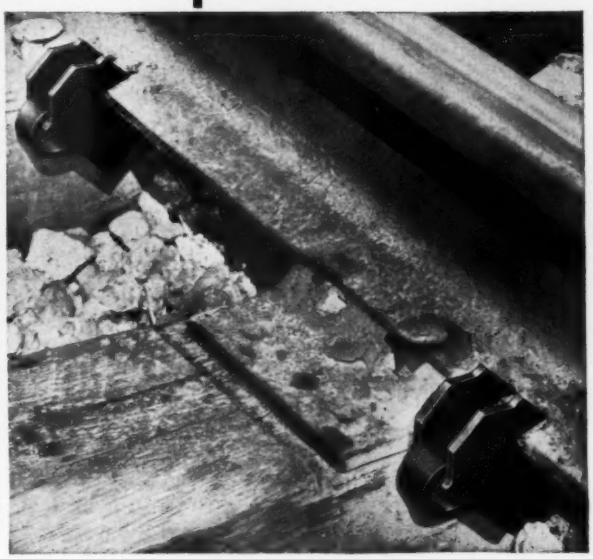
Write today for complete information on the Hydraulic Track Liner—Model P-O

Railway Trackwork Co.

3207 KENSINGTON AVE., PHILADELPHIA 34, PA.

RAIL GRINDERS, SWITCH GRINDERS, CROSS GRINDERS, SURFACE GRINDERS, RAIL DRILLS, BALLAST EXTRUDERS, BIT SHARPENERS, TIE NIPPERS, GRINDING WHEELS, CUT-OFF WHEELS, TRACK LINERS, BRUSHMASTER SAWS

True Temper RAIL ANCHORS



Built with a **double-jawed clamp** that can't slip

● True Temper rail anchors are completely different from all others. They feature a unique two-piece construction, yet are factory assembled so that they are as easy to install as any one-piece anchors.

The large clamp forms a double section which has two functions. First, it forms a set of double jaws that grip the rail more tightly than is possible where spring tension alone provides the gripping force. Second, the clamp provides a greater bearing surface to rest against the tie.

Both clamp and spring are formed from high carbon steel, tempered and hardened to precision standards developed in more than a century of metallurgical experience in building high quality tools for the railroad and other industries.

OTHER TRUE TEMPER RAIL ANCHOR FEATURES

Apply with any standard striking tool
Not affected by frozen ballast
Greater protection in case of derailments
Impossible to overdrive
Better fit on worn or corroded rails
Easy and safe to re-install

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Railway Appliance Division • Cleveland, Ohio

TRUE TEMPER RAILWAY TOOLS

his railroad service with the Milwaukee as an extra gang laborer in May 1931, and joined the TP&W as a section laborer at Watseka, Ill., in May, 1933. He was promoted to assistant roadmaster in August 1947, and to roadmaster in August 1949. He was named general roadmaster for the road in October, 1951.

G. D. Mayor, who was recently promoted to division engineer on the Chesapeake & Ohio at Huntington, W.Va., (RT&S, May, p. 74), was born at New York and was graduated from Washington and Lee University as a civil engineer. He entered the service of the C&O on February 9, 1926, as an assistant signalman at Huntington. In June 1929 he was appointed assistant cost engineer at Huntington, and in July 1933 was transferred in a similar capacity to St. Albans, W.Va., where he subsequently served as supervisor of track from July 1939 to May 1942. On the latter date, Mr. Mayor was advanced to assistant division engineer at Huntington, and in September 1949 was transferred to Russell, Ky., where he was serving when he received his recent promotion.

Wyatt H. McNairy, whose promotion to division engineer on the Southern at Bristol, Va., was announced recently (RT&S, May, p. 72), was born at Greensboro, N. C., on March 9, 1914, and began service with the Southern as a roadway apprentice at Charlottesville, Va., in June 1935, becoming a student apprentice at Winston-Salem, N. C., a month later. In November 1937 Mr. McNairy was appointed supervisor of track, in which capacity he served successively at Camden, S. C., Branchville and Batesburg and at Charlottesville. In July 1950 he was made assistant division engineer at Charlotte, N. C., the position he held at the time of his recent promotion.

W. Haden Wood, who was recently appointed assistant to chief engineer, maintenance of way and structures, Central Lines, of the Southern at Atlanta, Ga. (RT&S, May, p. 72) was born on January 26, 1894, at Bristol, Va. He entered the service of the Southern as a junior engineer in 1916 and served successively as assistant engineer, resident engineer, supervisor of track and assistant roadmaster until September 1935, when he became roadmaster on the Memphis division. Transferring in the same capacity to the Knoxville division in September 1936, Mr. Wood was appointed division engineer at Knoxville, Tenn., in January 1946. Since January 1948 he had been division engineer at Sheffield, Ala.

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SYNTRON
HAMMERS
. . . pack plenty of power
for fast, low cost construction
and maintenance
Syntron Hammers help reduce time and job costs because they are self-contained units — require no auxiliary equipment — easily portable over rough terrain or on right-of-way projects where bulky equipment is impractical.
GASOLINE HAMMER ROCK DRILLS
and BREAKERS
Deliver 2000 powerful blows per minute for high speed drilling of up to 2" dia. holes in rock. Drill Models feature exclusive automatic rotation of bit. Breaker Models with plenty of impact for digging, cutting, busting or tamping. These same powerful Syntron Gasoline Hammers are also available as Spike Drivers.
DIESEL PILE HAMMERS
Complete units — require no auxiliary power equipment. Develop 4300 to 16000 ft. lb. blows for low or high frictional resistance. Easily set up with mobile crane for driving concrete, steel or wooden piles.
Write for complete catalogue data—Free
SYNTRON COMPANY
290 Lexington Ave.
Homer City, Penna.

Track

Harvey H. Bradley, supervisor of bridges and buildings on the Southern at Atlanta, Ga., has been appointed supervisor of track at Branchville, S. C. **Doyle E. Frisby,** supervisor of track at John Sevier, Tenn., has been transferred to Hendersonville, N. C., to succeed **Andrews H. Mehaffey,** who has retired after 53 years of service.

W. J. Baetz, assistant supervisor of track on the Eastern division of the Pennsylvania at Mansfield, Ohio, has been promoted to supervisor of track on the Panhandle division of the Pennsylvania at Carnegie, Pa.

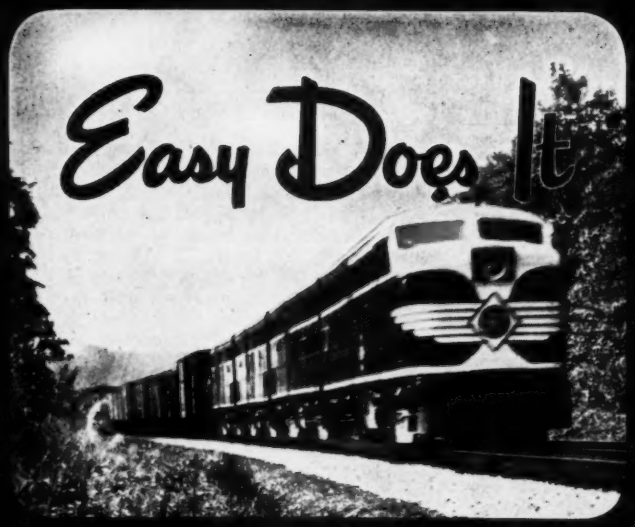
Thomas Burrell, Jr., supervisor of track on the New York Central at Corning, N. Y., has been appointed general track inspector, Lines East.

S. V. Flanagan, assistant supervisor track on the Chesapeake & Ohio at Richmond, Va., has been named designer water supply at the same point. Mr. Flanagan has been succeeded by **K. K. Butler,** formerly assistant cost engineer at Richmond. **T. A. Archer,** assistant cost engineer at St. Albans, W. Va., has been promoted to assistant supervisor track at St. Albans.

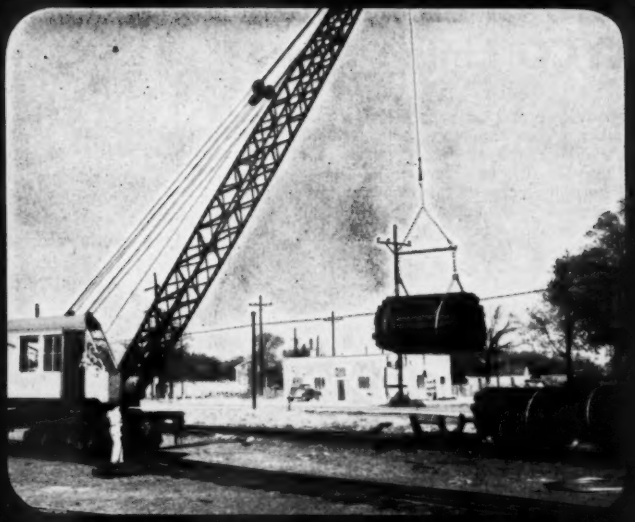
John W. Carpenter, supervisor of track on the Pennsylvania division of the Delaware & Hudson, has retired after 48 years of service.

R. O. Nutt, who has been appointed roadmaster for the Gulf, Colorado & Santa Fe at Silsbee, Tex. (RT&S, June, p. 70), was born at Topeka, Kan., March 28, 1924. He attended Rice Institute and received a B.S. degree in civil engineering in 1947. He began his railroad service with the Sante Fe at Clovis, N. M., in June, 1941 as a chainman and rodman on a part-time basis during the summers

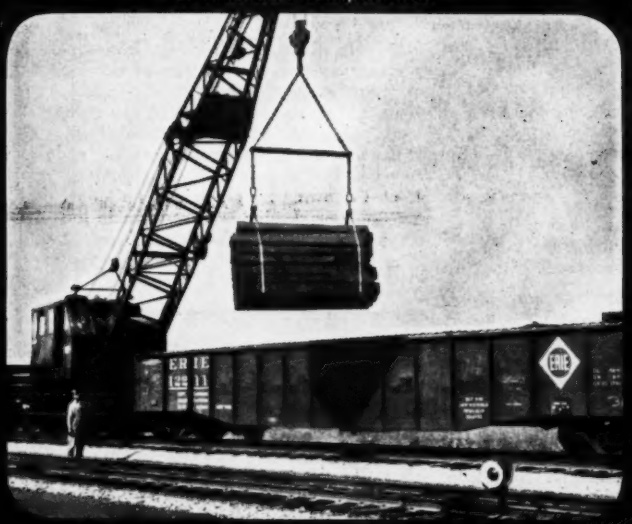
(*Continued on page* 74)



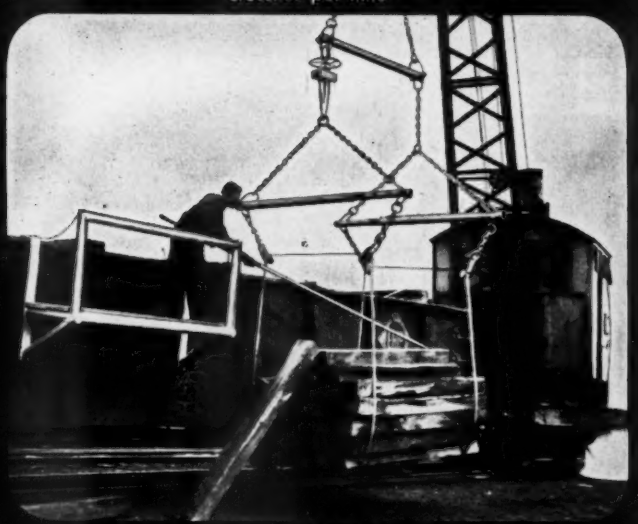
"Rising costs challenge the railroads—the backbone of America's transportation."



"to keep the traffic moving calls for hundreds of crossties per mile"



"it's an easy job for the crane operator to load 6- and 7-ton loads of ties"



"one road distributed 10,000 ties using a crew of 4 men and a foreman"

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BRAINARD STEEL'S new motion picture presents *mechanized* tie handling—which has produced cost savings up to 30% on many major railroads. Now you can easily see all the details of mechanized tie handling in action, in full color and sound.

Write today to request a showing for your engineering and track maintenance personnel. Film also available for loan without charge for association and technical meetings. Write Brainard Steel Division, Dept. S-7, Griswold Street, Warren, Ohio.

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STEEL DIVISION
SHARON STEEL CORPORATION

Ask yourself: "Can I afford to be *without* a HAYCO Lining Scope?"

(Patent Applied For)

This sturdy two-year old precision instrument has already taken its place among essential standard railroad tools. Its one-minute set-up and simple operation will sell it to you, too, at first use. Its light weight (18 pounds including carrying case) and rugged construction let you carry it easily and handle it freely. Its bulls-eye accuracy at distances up to 1000 feet lets you signal just the right amount of throw for perfect tangent track. And you don't have to do without something else to get it—because it's priced to ease into today's tight budgets. You can order direct from this ad, and you should if you are planning any track lining this summer. The price is $137.50 complete with case, F. O. B. plant, Chicago, Illinois.

HAYCO with gang-lining on fast metropolitan track.

HAYCO base in electric tester. To make certain that heat-treated aluminum base would hold a thread, this machine turned the steel HAYCO leveling screw 3000 times under pressure in the base casting.

HAYCO positioned for use. Six-power telescope, 34" above top of rail, has achromatic lens, vertical and horizontal cross-hairs. Note rear-view mirror for operator's protection. All HAYCO parts are brass, plated steel, or other weather-resistant material.

HAYCO Scopes ready to be packed for Expressing. Forty-four roads are now using HAYCO Lining Scopes.

(Right) HAYCO in carrying case. To set up, simply remove from case, clamp to rail (any size), extend to desired height, level and focus. No assembly required. Case is of ⅜" outdoor plywood, hard-finished in metallic grey, equipped with lock. Measures 30" x 9" x 7½".

HAYCO with the new Nordberg Trakliner on high-speed main line.

For detailed information, write for Circular No. 104.

The BRICE HAYES Co.
7206 W. Everell Ave.

Railway Personnel (cont'd)

of 1941 through 1946. Following his graduation from college, Mr. Nutt joined the Santa Fe on a full-time basis as a draftsman at Galveston, Tex., and subsequently became assistant engineer at the same point. In September 1953 he was promoted to assistant roadmaster for the Temple, Ft. Worth & Galveston, a subsidiary line.

Milton L. Spangler, whose promotion to general roadmaster on the Toledo, Peoria & Western at Peoria, Ill., was announced recently (RT&S, June, p. 70), was born at Spencer, Ind., April 9, 1911. He joined the TP&W as a section laborer in April 1936, and was promoted to section foreman in February 1942. He later served as extra gang foreman at various locations until being promoted to track supervisor in December, 1951.

Bridge and Building

J. F. McCay, assistant supervisor of bridges and buildings on the New York Central, has been promoted to supervisor of bridges and buildings with headquarters as before at Chicago.

John C. Brown, bridge and building master on the Champlain division of the Delaware & Hudson at Plattsburg, N. Y., has retired after 50 years of service.

Leonidas H. Smith, Jr., has been appointed supervisor of bridges and buildings on the Southern at Atlanta, Ga., to succeed **Harvey H. Bradley,** who, as announced elsewhere in these columns, has been appointed supervisor of track at Branchville, S. C.

Eugene S. Meserve, assistant supervisor of bridges and buildings on the Portland division of the Boston & Maine at Dover, N. H., has been promoted to supervisor to succeed **Howard B. Richardson. Clarence D. Pierce,** assistant supervisor of bridges and buildings on the Terminal division at Boston, has been transferred to Dover to succeed Mr. Meserve, and **John H. Watts** has been appointed to replace Mr. Pierce at Boston.

E. N. Morin, bridge and building master on the Canadian Pacific at Farnham, Que., has been transferred to Smith's Falls, Ont., to succeed **W. J. Johnston,** who has retired after 43 years of service.

W. H. Pahl, who was appointed supervisor of structures on the Pennsylvania at Harrington, Del. (RT&S, June p. 70), was born at Lincoln, Neb., December 27, 1924. He enrolled in Union College in September 1941, and studied there until his entrance into the U. S. Navy in June 1942. Following his discharge from the service, he returned to Union College and received a B.S. degree in civil engineering in June 1949. Shortly after graduation from college he joined the Pennsylvania as a junior engineer in the B&B department at Pittsburgh, Pa. He was appointed assistant supervisor of structures in April, 1951, and served in that capacity until his recent promotion.

Special

A. E. MacMillan, who has been appointed project engineer for the Boston & Maine at Boston, Mass., (RT&S, June, p. 66), was born at Cambridge, Mass., April 23, 1922. He began his railroad service with the Boston & Albany in August 1941 as a mail porter, and in November was appointed valuation recorder in the engineering department at Boston, Mass. Following service with the Military Railway Service during World War II, he enrolled at Rensselaer Polytechnic Institute in 1946 and received a B.S. degree in civil engineering in June 1949. He joined the Baltimore & Ohio following his graduation as a rodman at Clarksburg, W.Va., and served there until May 1951 when he was appointed assistant engineer for the Chicago Great Western at Oelwein, Iowa, the position he was holding at the time of his recent appointment.

Donald R. Bash, who has been appointed assistant general fire prevention engineer for the Southern Pacific (RT&S, May, p. 78), was born at Salt Lake City, Utah, June 26, 1927. He attended the University of California where he received a B.S. degree in forestry in June 1952. Following his graduation he joined the Southern Pacific as a rodman in the engineering department where he served until his recent promotion.

Association News

Metropolitan Maintenance of Way Club

The annual outing of the club was held at the Wayne Country Club at Preakness, N. J., on June 3, with 239 members and guests in attendance. A buffet luncheon was served, and the sports events, for which prizes were awarded to the winners, consisted of golf, quoits, horseshoes and softball.

American Railway Engineering Association

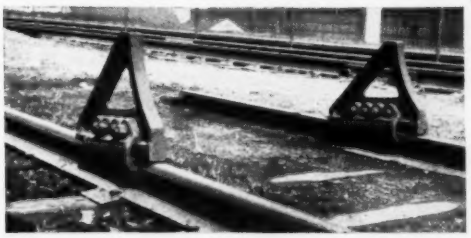
At the time of going to press two committees have scheduled meetings to be held during July. They are Committee 15—Iron and Steel Structures, which will hold a two day meeting on July 14 and 15 at the Statler Hotel, Cleveland, Ohio; and Committee 22—Economics of Railway Labor, which will also hold a two day meeting on July 14 and 15. On the first day the committee will meet at the Hotel Gibson, Cincinnati, Ohio. On July 15 it will make an inspection trip over the Chesapeake & Ohio to Huntington, W. V.

Roadmasters' Association

The next meeting of the Executive Committee of the Roadmasters' Association will be held on July 12 at the

(*Continued on page* 76)

Q AND C CAR STOPS CONSERVE TRACK SPACE



Q and C Car Stops are made in one size, suitable for use on all rails found in yards and side tracks.

Their use results in real economy because they are applied with a minimum of labor and require very little track space.

They wedge firmly to the rails. No drilling is necessary.

Specify them on your requisitions.

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SIMPLEX JACKS

First Choice for Railroad Use!

POLE PULLING AND STRAIGHTENING JACKS

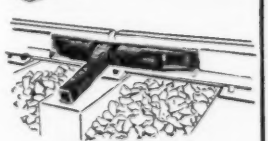
5 and 15 ton models for all pole sizes. Base pivots. Also can be used for guy wire tightening and pulling underground cables.

TRACK JACKS (Trip Type)

Malleable or aluminum housings. Large toe areas. Trip on both sides. 8 models

HYDRAULIC JACKS

Capacities of 3-100 tons. 8 models. Also self-contained and remote controlled hydraulic rams and pullers.



RAIL EXPANDERS

Permit crossing and switch lining, rail spreading and pulling without service interruption.

OTHER SIMPLEX RAILROAD JACKS

- Tie Removers and Replacers
- Tie Spacers
- Cable Reel Jacks
- Pipe Pushers
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2543 Gardner Road
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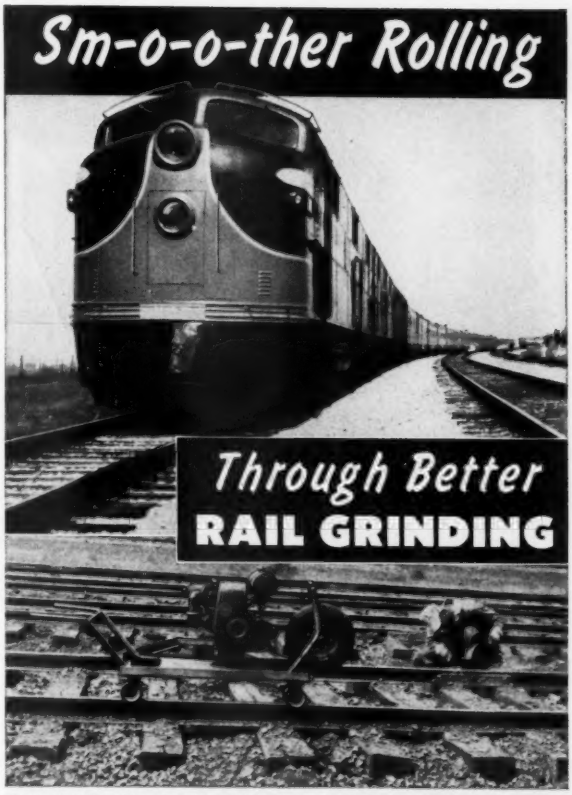
WORLD'S LARGEST MANUFACTURERS OF INDUSTRIAL MECHANICAL AND HYDRAULIC JACKS

SIMPLEX
RE-MO-TROL UTIL-A-TOOL **JACKS** JENNY ROL-TOE



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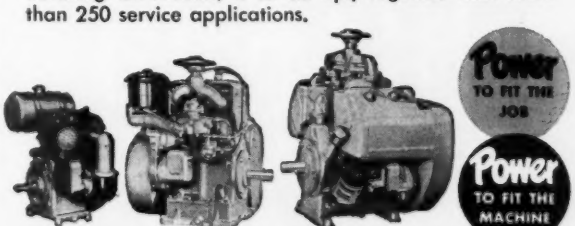
Typical of the many maintenance-of-way power services supplied by Wisconsin Heavy-Duty Air-Cooled Engines is the job of grinding rail joints, switch-points, frogs and crossings, using light-weight portable equipment.

For this job as well as for many others, Wisconsin Air-Cooled Engines are widely specified both by the equipment builders and users, alike. These rugged, all-weather engines have the built-in stamina and *lugging power* that keep the work moving. On variable heavy-duty power jobs, when sudden overloads slow down the engine speed and the torque builds up, your Wisconsin Engine *hangs on* where a high-speed engine would stall and quit in the pinches.

For service-proved dependability, specify "Wisconsin Power" for your equipment. Write for new 64-page catalog (Form S-150), with condensed specifications covering all models, 3 to 36 hp., together with more than 250 service applications.



Single Cyl. 3 to 9 hp. | 2-cylinder 7 to 15 hp. | V-type 4 cyl. 15 to 36 hp.

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World's Largest Builders of Heavy-Duty Air-Cooled Engines
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That's the story on Duff-Norton lightweight aluminum track jacks.

No. 517BA single acting surfacing jack (right) can raise 15 tons, 5 inches, and is twenty-five per cent lighter than a similar jack with a malleable housing. No. 117A single acting track jack (left) can move 15 tons, 13 inches and is thirty-three per cent lighter than its counterpart with a malleable housing.

Safe, rugged, dependable Duff-Norton aluminum track jacks soon pay for their slight additional cost by increased productivity . . . crews can keep pace with fast, modern maintenance equipment.

Get the complete specifications on these and other Duff-Norton track jacks. Write the world's oldest and largest manufacturer of lifting jacks for Track Jack Bulletin AD18-F, The Duff-Norton Manufacturing Co., P. O. Box 1889, Pittsburgh 30, Pa. Canadian plant—Toronto 6, Ontario.

DUFF-NORTON

Jacks

"Giving Industry A Lift Since 1883"

Association News (Cont'd)

Chicago Engineers' Club. To a large extent the meeting will be concerned with preparations for the annual convention to be held at the Conrad Hilton Hotel, Chicago, September 13-15. This work will include consideration by the Executive Committee of the three reports of subjects committees that were not reviewed at the previous meeting. Also, the committee will discuss details of the convention program. It was reported that the 1953 Proceedings of the Association were mailed to members during the latter part of June.

Bridge & Building Association

The Executive Committee of the Association met at the Chicago Engineers' Club on June 28, primarily for the purpose of formulating plans for the annual convention of the association to be held on September 13-15 at the Conrad Hilton Hotel, Chicago, concurrently with that of the Roadmasters' Association. Much time was devoted to reviewing and discussing the eight reports of subjects committees, which have been

Meetings and Conventions

American Railway Bridge and Building Association—Annual meeting, September 13-15, 1954, Conrad Hilton Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

American Railway Engineering Association—Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—E. C. Patterson, secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer, Room 1008, Frisco Building, 906 Olive street, St. Louis 1, Mo.

National Railway Appliances Association—J. B. Templeton, Secretary, 1020 So. Central avenue, Chicago 44; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Railway Tie Association—Annual Meeting, October 20-22, Mayflower Hotel, Washington, D. C. Roy M. Edmonds, Secretary-Treasurer, 1221 Locust street, St. Louis 3, Mo.

Roadmasters' and Maintenance of Way Association of America—Annual meeting, September 13-15, 1954, Conrad Hilton Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.

prepared for presentation at the convention. Other details of the convention program were also discussed.

The Proceedings of the 1953 convention of the association will be mailed to members about the middle of July.

Supply Trade News

General

Thirteen new dealers have been appointed to sell and service the Michigan line of excavator-cranes and tractor-shovels, products of the **Construction Machinery Division** of **Clark Equipment Company.**

Eight of the dealers will handle both excavator-cranes and tractor shovels. They are Tyler Equipment Corporation, East Longmeadow, Mass.; Eddy Equipment Company, Buffalo, N. Y.; Highway Equipment Company, Inc., Pittsburgh, Pa.; Cox Brothers, Hoopeston, Ill.; Phillips Machinery Company, Richmond, Va.; Anderson Equipment Company, Houston, Tex. Innes Equipment Limited, Toronto, Ont.; and Innes Equipment Quebec Limited, Montreal, Que.

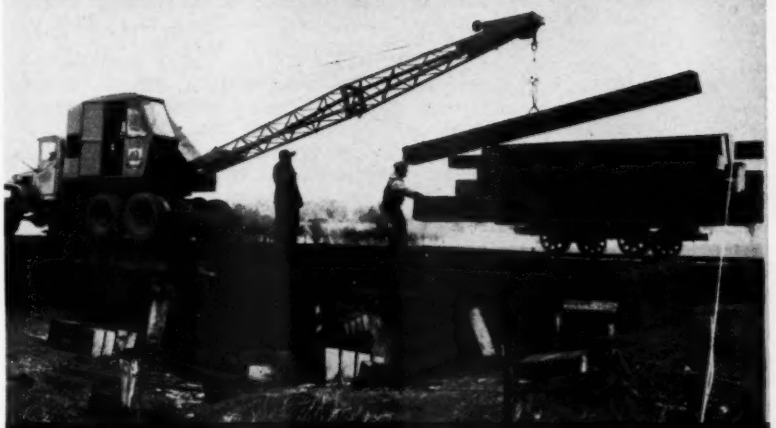
Five of the dealers will handle only Michigan's tractor shovels. They are Clark-Wilcox Company, Boston, Mass.; W. K. Vickery, Buffalo, N.Y.; Minnesota Constructors Equipment Company, Inc., Minneapolis, Minn.; Myers Equipment Company, Duluth, Minn.; and Sam H. Denney Road Machinery Company, Wichita, Kansas.

The consolidated sales office of **Koppers Company, Inc.,** at New York City, has been moved from the 59th floor of the Empire State Building to new quarters on the 14th floor at 430 Park avenue.

The Wellman Engineering Company, Cleveland, Ohio, has acquired the Locomotive Crane Division and plant of the

T. C. Gray, director of engineering for the Pullman-Standard Car Manufacturing Company, has been named vice-president in charge of engineering. Mr. Gray joined Pullman-Standard in 1949 as manager of product engineering following a wide experience in the railroad engineering field.

SEND OUT A SCHIELD Bantam®



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Send a BANTAM to handle bridge building, ditch cleaning, culvert placing, land slide clearing . . . and SAVE both time and money over expensive work crews!

The BANTAM METHOD enables you to handle these jobs without tying up train schedules . . . drives anywhere in your district at 40 MPH to get jobs done in a hurry with minimum manpower!

BANTAMS load out materials in the yard . . . drive to the work site . . . handle jobs fast, and are ready to move on to the next assignment. There's no waiting for days for work trains to arrive . . . Operator simply hops in and drives to your work site!

Moving men, materials and equipment has always been one of your problems in keeping jobs on schedule . . . you can save time and labor by the efficient maintenance of way with a Bantam.

Find out for yourself how the BANTAM can help you solve these problems . . . help make your entire Maintenance-of-Way or Bridging and Building operation more efficient and less costly! Mail the handy coupon TODAY for FREE information!

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- Repairing Grade Crossings
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- Loading out Strings, Caps and Braces

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1 MAN OPERATED! Ideal for mounting on flat cars . . . Mobile between jobs on trailer pulled by your truck!

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Browning Crane & Shovel Co., Cleveland. Henceforth, the locomotive crane organization will be known as the Wellman-Browning Locomotive Crane Division of the Wellman Engineering Company. It is announced that Wellman will take possession of Browning's plant in approximately 90 days, thereby giving the company additional room for expansion of its production facilities in the Cleveland area. Browning truck and wagon cranes will continue to be manufactured by the Browning Crane & Shovel Co.

Personal

As a result of the purchase of the American Lumber & Treating Company by the **Koppers Company, Inc.,** several appointments incorporating top personnel of the AL&T into the management structure of Koppers Wood Preserving Division have been made. **Douglas Grymes, Jr.,** sales manager of the Wood Preserving Division, has been appointed assistant vice-president. Mr. Grymes will continue to serve as sales manager. **Carl Wayman,** formerly vice president of the AL&T, has been appointed assistant vice-president and assistant manager of the Eastern Region. **D. A. Mitchell,** assistant to the vice-president and general manager, has been named manager of the newly-formed Pacific District. **J. R. Cooper** has been appointed procurement manager of the Pacific District. **R. B. Putnam,** formerly sales manager of the AL&T, has been appointed manager of the newly-created Wolman Preservative Department, and **R. H. Devine** and **D. C. Smith** have been named assistant sales managers. **M. R. Clifton,** sales manager of the Baltimore area, has been named sales manager of the Pittsburgh District, succeeding Mr. Smith. **C. D. Bird,** formerly district sales manager of the AL&T, has been named Baltimore Area sales manager. **L. A. Pisegna** has been appointed sales manager of the Montgomery (Ala.) area.

Owen Ford, formerly with the **A. O. Smith L.P.G. Division** at Houston, Tex., has been appointed sales engineer for the Welding Products division in the southeastern territory with headquarters at Birmingham, Ala. **James McKinney** has been appointed sales engineer for the Southern California territory at Los Angeles, and **George Tweed** has been named sales engineer at Chicago to cover northern Indiana and Gary. Mr. Tweed succeeds **Thomas Scannell,** who has left the company to join the staff of **Time** magazine.

William G. Gerzig, field engineer, has been named manager, railroad department, for **Fairbanks, Morse & Co.** at Chicago, succeeding **E. C. Golladay,** who has retired.

Warwick J. Hayes, Jr., sales representative of the **Industrial Brownhoist Corporation** at Cleveland, has been named general sales manager at Bay City, Mich. **Stanley R. See,** district sales manager at Philadelphia, Pa., has been appointed director of sales, Eastern division, including New York and Philadelphia offices.

Obituary

Erling Wessel, vice president of the Beall Tool Division of Hubbard & Co., East Alton, Ill., died suddenly on May 18. Mr. Wessel was born on September 1, 1886, at Oslo, Norway. He had served

Erling Wessel

with Hubbard & Co. since 1917, representing the company in various parts of the United States. In 1929 he became vice president and general manager of the Beall Tool Company, a subsidiary of Hubbard & Co.

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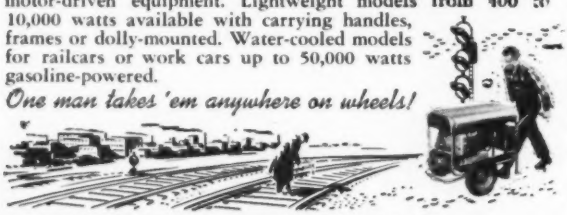

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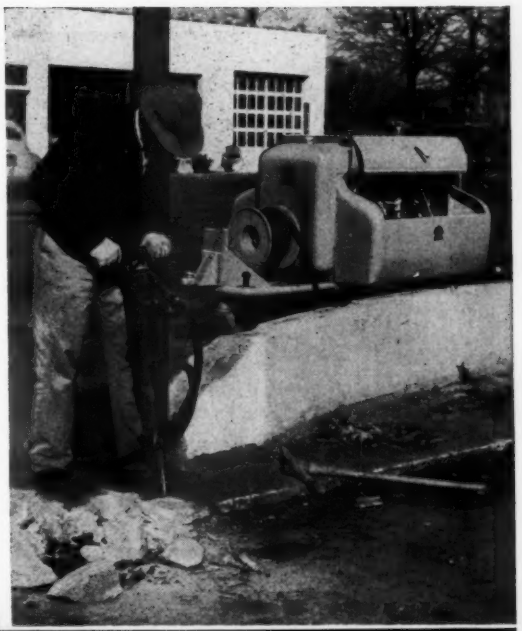

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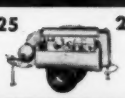
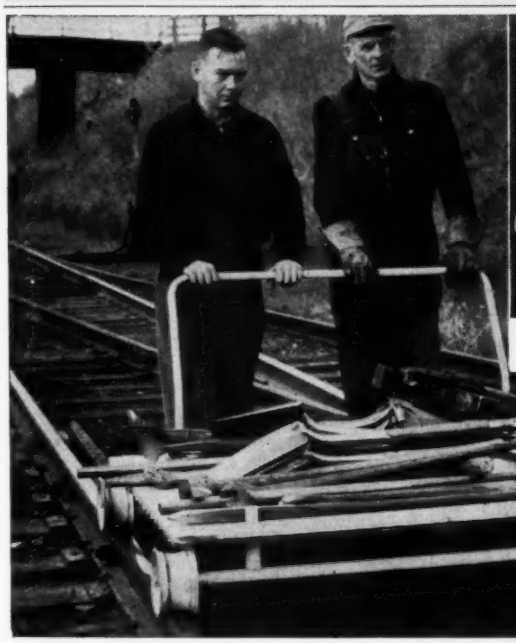
20-35 60 125  210 315 600



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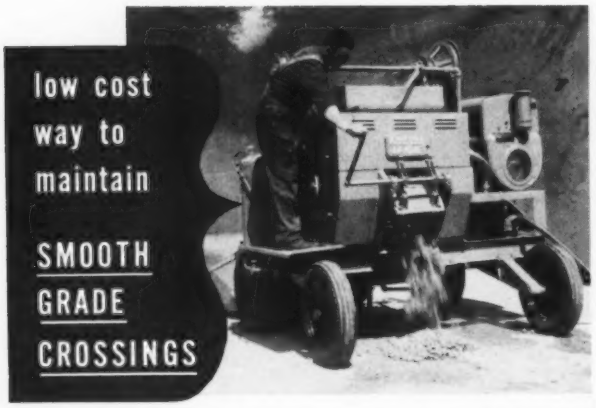

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Manufacturers' Literature

Following is a compilation of free literature, pamphlets, and data sheets offered by manufacturers to the railroad industry (items #7-10 described in ads in this issue). Circle the number(s) on the coupon below to receive the information desired; the requests will be sent direct by the manufacturers.

1. PNEUMATIC EQUIPMENT. *Gardner-Denver Company.* Compact catalog (Bulletin #GP-100) covers the complete line of Gardner-Denver pumps, compressors, rock drills and pneumatic equipment, contains condensed basic information and specifications for each product or group on individual bulletins, and is plastic bound with eleven product sections index-divided.

2. CORROSION CONTROL. *Subox, Inc.* 20-page booklet "Corrosion Control of Electric Light and Power Structures and Equipment" describes and pictures many different uses and applications of Subox and Subalox paints.

3. STEEL CONDUIT FOR ELECTRICAL SECTIONS. *Rome Cable Corporation.* 8-page 3-hole punched bulletin (C-1) "The Story of Rome Rigid" gives historical background and specific details with applications of Rigid steel conduit for electrical system protection.

4. BATTERIES. *Primary Battery Div. Thomas A. Edison, Inc.* Brochure (PB 1081) gives complete details and typical applications of Edison Carbonaire batteries for switch lamp lighting and other railway applications; includes battery life table and shows how switch lamp installations are made.

5. TIE PADS. *Johns-Manville.* Brochure (RR-14A) explains how to prolong the service life of railroad ties by cushioning the track structure with Johns-Manville tie pads; states the pads are available in all standard sizes, plain or with special one-side coating.

6. TRUCK CRANES. *Harnischfeger Corporation.* 28-page booklet (bulletin #TX-143) describes the P&H Models 255-A, 355-A and 555-A Truck Cranes, gives on-the-job photographs and complete descriptions and specifications of features such as carriers, power plants, P&H torsion bar front axles, and convertibility.

7. EARTHMOVING EQUIPMENT. *LeTourneau-Westinghouse Co.* Additional information offered on 9-ton, 122 hp. D Tournapull and on 19 m.p.h. 186 hp. rubber-tired Tournatractor, as described in ad in this issue. *Please specify* item on coupon below.

8. SPRING WASHERS. *Eaton Manufacturing Company.* Engineering Folder R53 gives complete details with specifications and sizes of the Reliance Hy-Chrome line of spring washers.

9. RAILROAD CRANES. *Cullen-Friestedt Company.* Bulletins offered giving complete details on Burro cranes, which can handle any railroad job, travel speeds up to 22 m.p.h., and have draw bar pull of 7500 lbs.

10. TIE HANDLING MOVIE. *Brainard Steel Div. Sharon Steel Corporation.* New motion picture presents mechanized tie handling producing cost savings up to 30% on major railroads, in color and sound; request showing for your engineering and track maintenance personnel (also available for loan without charge for association and technical meetings). Please enclose *card* or *letterhead* with request! (See ad in this issue.)

11. SPRAY GUNS. *The DeVilbiss Company.* 20-page booklet (F-275) "Spray Gun Motion Study" includes a description of the procedure in spraying various surfaces, the theme being high quality finishes at a minimum cost.

12. LUBRICATED PLUG VALVES. *Homestead Valve Manufacturing Company.* 24-page Reference Book #39-5 shows Homestead Lubricated Plug Valves in full-port and venturi types, sizes up to 14", and with a choice of self-sealed two-piece plug or one-piece plug designs; engineering data includes principal dimensions, types of control, lubricants.

13. NICKEL IN BRIDGE CONSTRUCTION. *The International Nickel Company, Inc.* 40-page bulletin (A-179) "Nickel Steels and Other Nickel Alloys In Bridge Construction" presents modern usage and past history of nickel alloys in bridge construction; examples of the use of other materials such as Ductile Iron, Monel, nickel cast iron and cast nickel alloy steel are given.

14. WIRE AND STRAND. *John A. Roebling's Sons Corporation.* 16-page catalog (PC 929) "Tensioning Materials For Prestressed Concrete" gives detailed information and charts on characteristic properties of Roebling wire and strand, includes descriptions and photos of various jobs in which prestressing is used.

15. SPRAY PAINTING. *The Binks Manufacturing Company.* 74-page catalog (956) "Binks—Everything For Spray Painting" classifies the 1100 Binks products and accessories into 11 sections, keyed by thumb indexing, devotes 8 pages to correct nozzle selection, and provides detailed data on spray guns, extensions and attachments, etc.

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